FILE NO. 11

Research
and
Discovery on:

The Sanctuary
and
Human Pathology
(Diseases)

METHOD 11

THE SANCTUARY AND HUMAN PATHOLOGY (DISEASES)

SUGGESTED METHOD:

- Research with a Concordance the numerous promises given by the Lord to him that is willing to obey and the consequences if he chooses to disobey.
- Compare the diseases of today with those of the heathen who refused to follow God. These consequences were and still are the direct result of transgressing the laws of health. View the Health Bulletin on the Definition of Sickness.
- Visit the Animated Study of the Brain and Body Nerves:
- Brain Nerves Under Attack

NONE OF THESE DISEASES

"And said, If thou wilt diligently hearken to the voice of the LORD thy God, and wilt do that which is right in his sight, and wilt give ear to his commandments, and keep all his statutes, I will put none of these diseases upon thee, which I have brought upon the Egyptians: for I am the LORD that healeth thee." Exodus 15: 26.

PURPOSE:

The purpose of this study is to establish the similitude between the diseases brought upon the Egyptians in Israel's time and the diseases of today.

INTRODUCTION:

This study does not intend to cover the whole scope of diseases grouped under the science of pathology. Further studies are presented in file 19 under Statutes and the studies on the Brain Nerves in file 5, 11, 17 and 22 attempt to complement this short essay.

1. LEPROSY OF THE SKIN:

• See Leviticus 13: 1-46

Leprosy, a disease mentioned often in the Bible, was a dreaded skin affliction in ancient times. Modern medicine has isolated several different types of leprosy, variously characterized by the formation of nodules, ulcers, deformities, and loss of feeling in the skin. In Old Testament times, a symptom used to diagnose the disease was the persistence of shiny white spots under the skin. (Lev. 13: 3, 4).

Some medical experts believe the ancient disease was a severe type of psoriasis, or scaling of the skin, that is rarely seen today. It was probably more prevalent than Hansen's disease, the term generally used for leprosy today.

• Lev. 13:22

"And if it spread much abroad in the skin, then the priest shall pronounce him unclean: it is a plague."

Plague: Skin Infection.

• Lev. 13:32
"And in the seventh day the priest shall look on the scall: and, behold, if the scall be not spread in the skin, nor be in sight deeper than the skin; then the priest shall pronounce him clean: and he shall wash his clothes, and be clean."
Scall: Skin eruption.

• Lev. 13:38
"If a man also or a woman have in the skin of their flesh bright spots, even white bright spots."
White bright spots: Pimples.

• Lev. 13:39
"Then the priest shall look: and, behold, if the bright spots in the skin of their flesh be darkish white; it is a freckled spot that grows in the skin..."
Freckled spot: Eczema.

• Lev. 13:43
"Then the priest shall look upon it: and, behold, if the rising of the sore be white reddish in his bald head, or in his bald forehead, as the leprosy appears in the skin of the flesh."
Rising of the sore: Swelling.

• Lev. 15:2
"Speak unto the children of Israel, and say unto them, When any man hath a running issue out of his flesh, because of his issue he is unclean."
Running issue: Running sore.

<u>2. SICKNESS BROUGHT UPON BECAUSE OF DISOBEDIENCE:</u>
• Deut. 28:15
"But it shall come to pass, if thou wilt not hearken unto the voice of the LORD thy God, to observe to do all his commandments and his statutes which I command thee this day; that all these curses shall come upon thee, and overtake thee."

• Deut. 28:21
"The LORD shall make the pestilence cleave unto thee, until he have consumed thee from off the land, whither thou goest to possess it."

• Deut. 28:22
"The LORD shall smite thee with a consumption, and with a fever, and with an inflammation, and with an extreme burning, and with the sword, and with blasting, and with mildew; and they shall pursue thee until thou perish."
Consumption: Lung problems such as: Bronchitis - Pneumonia - Pleurisy - Tuberculosis
Inflammation: "ITIS" such as: Arthritis, Bursitis, Tendinitis, Meningitis; all Inflammations of the Joints, Muscles, Organs.
Blasting: Plant disease
Mildew: Fungus causing allergies

• Deut. 28:27, 35
"The LORD will smite thee with the botch of Egypt, and with the emerods, and with the scab, and with the itch, whereof thou canst not be healed."
Botch: Boil - that cannot be healed - from head to toe
Emerods: Hemorrhoids

• Deut. 28: 28, 29
"The LORD shall smite thee with madness, and blindness, and astonishment of heart: And thou shalt grope at noonday, as the blind gropes in darkness, and thou shalt not prosper in thy ways: and thou shalt be only oppressed and spoiled ever more, and no man shall save thee."
Madness: Mental disorder, Nervous Breakdown, Paranoia, Schizophrenia, Dementia, Delirium
Blindness: Blindness can be caused by Sexually Transmitted Diseases
Astonishment of the heart: Anxiety and Panic attacks

• Deut. 28:65
"And among these nations shalt thou find no ease, neither shall the sole of thy foot have rest: but the LORD shall give thee there a trembling heart, and failing of eyes, and sorrow of mind."
Trembling Heart: Heart diseases such as: Palpitation, Heart Attack
Failing of eyes: Cataract, Myopia, Glaucoma, Presbyopia.

HEALTH BULLETIN #11
WATER OF LIFE

WHAT IS SICKNESS

Disease is an effort of nature to free the system from conditions that result from a violation of the laws of health. In case of sickness, the cause should be ascertained. Unhealthful conditions should be changed, wrong habits corrected. Then nature is to be assisted in her effort to expel impurities and to reestablish right conditions in the system.

Too little attention is generally given to the preservation of health. It is a far better to prevent disease than to know how to treat it when contracted. It is the duty of every person, for is own sake, and for the sake of humanity, to inform himself in regard to the laws of life and conscientiously to obey them. All need to become acquainted with that most wonderful of all organisms, the human body. They should understand the functions of the various organs and the dependence of one upon another for the healthy action of all. They should study the influence of the mind upon the body, and of the body upon the mind, and the laws by which they are governed.

We cannot be too often reminded that health does not depend on chance. It is a result of obedience to law. This is recognized by the contestants in athletic games and trials of strength. These men make the most careful preparation. They submit to thorough training and strict discipline. Every physical habit is carefully regulated. They know that neglect, excess, or carelessness, which weakened or cripples any organ or function of the body, would ensure defeat. How much more important is such carefulness to ensure success in the conflict of life.

Disease never comes without a cause. The way is prepared, and disease invited, by disregard of the laws of health. Many suffer in consequence of the transgression of their parents. While they are not responsible for what their parents have done, it is nevertheless their duty to ascertain what are and what are not violations of the laws of health. They should avoid the wrong habits of their parents and, by correct living, place themselves in better conditions.

The greater number however, suffer because of their own wrong course of action. They disregard the principles of health by their habits of eating,

drinking, dressing, and working. Their transgression of nature's law produces the sure result; and when sickness comes upon them, many do not credit their suffering to the true cause, but murmur against God because of their afflictions. But God is not responsible for the suffering that follows disregard of natural law.

One of these laws is Water. In health and in sickness, pure water is one of heaven's choicest blessings. Its proper use promotes health. It is the beverage which God provided to quench the thirst of animals and man. Drunk freely, it helps to supply the necessities of the system and assists nature to resist disease. The external application of water is one of the easiest and most satisfactory ways of regulating the circulation of the blood. A cold or cool bath is an excellent tonic. Warm baths open the pores and thus aid in the elimination of impurities. Both warm and neutral baths soothe the nerves and equalize the circulation.

The Ministry of Healing, p. 126, 234, 238 (excerpts).

FILE NO. 11
THE SANCTUARY AND HUMAN PATHOLOGY (DISEASES)

IT IS WRITTEN:
"He said: If thou wilt diligently hearken to the voice of the Lord thy God, and wilt do that which is right in his sight, and wilt give ear to his commandments, and keep all his statutes, I will put none of these diseases upon thee, which I have brought upon the Egyptians; for I am the Lord that healeth thee." Exodus 15:26.

"But it shall come to pass, if thou wilt not hearken unto the voice of the Lord thy God, to observe to do all his commandments and his statutes which I commanded thee this day; that all these curses shall come upon thee, and overtake thee: The Lord shall make the pestilence cleave unto thee, until he have consumed thee from off the land, whither thou goest to possess it. The Lord shall smite thee with a consumption, and with a fever, and with an inflammation, and with an extreme burning, and with the sword, and with blasting, and with mildew; and they shall pursue thee until thou perish." Deuteronomy 28:15, 21, 22.

"In the ancient Jewish service, it was required that every sacrifice should be without blemish. In the text, we are told to present our bodies a living sacrifice, holy, acceptable unto God, which is our reasonable service...

If we weaken these powers of mind or body by wrong habits or indulgence or perverted appetite, it will be impossible for us to honor God as we should.

God requires the body to be rendered a living sacrifice to Him, not a dead or a dying sacrifice.

Sickness is caused by violating the laws of health; it is the result of violating nature's law.

It is as truly a sin to violate the laws of our being as it is to break the ten commandments. To do either is to break God's laws. Those who transgress the law of God in their physical organism, will be inclined to violate the law of God spoken from Sinai."
Counsels on Diet and Foods, p. 17-21

ANIMATED STUDY OF THE BRAIN AND BODY NERVES: Brain Nerves Under Attack! (See File 11, pg.11- 82)
Further study on Disease, see Statutes, File 19
Further study on a remedy, see Brain Nerves Under Repair, File 17

File 11 - Appendix of Studies
STUDY: Warning: The Deadly Protein "PRIONS" and MAD COW DISEASE
(See File 11, p. 83-85)
STUDY: What Causes Depression and What To Do About It!
(See File 11, p. 122-140)
STUDY: Parasites: The Uninvited Guests
(See File 11, p. 141-158)

REFERENCES:
It is written, The Bible, Deuteronomy, Chapter 28

The Bible Companions: E. G. White, Author
Counsels on Diet and Foods, p, 17-21.

Appendix

ALLEGORY BETWEEN THE SANCTUARY, THE HUMAN PATHOLOGY AND THE CHARACTER: (READ CHART VERTICALLY)

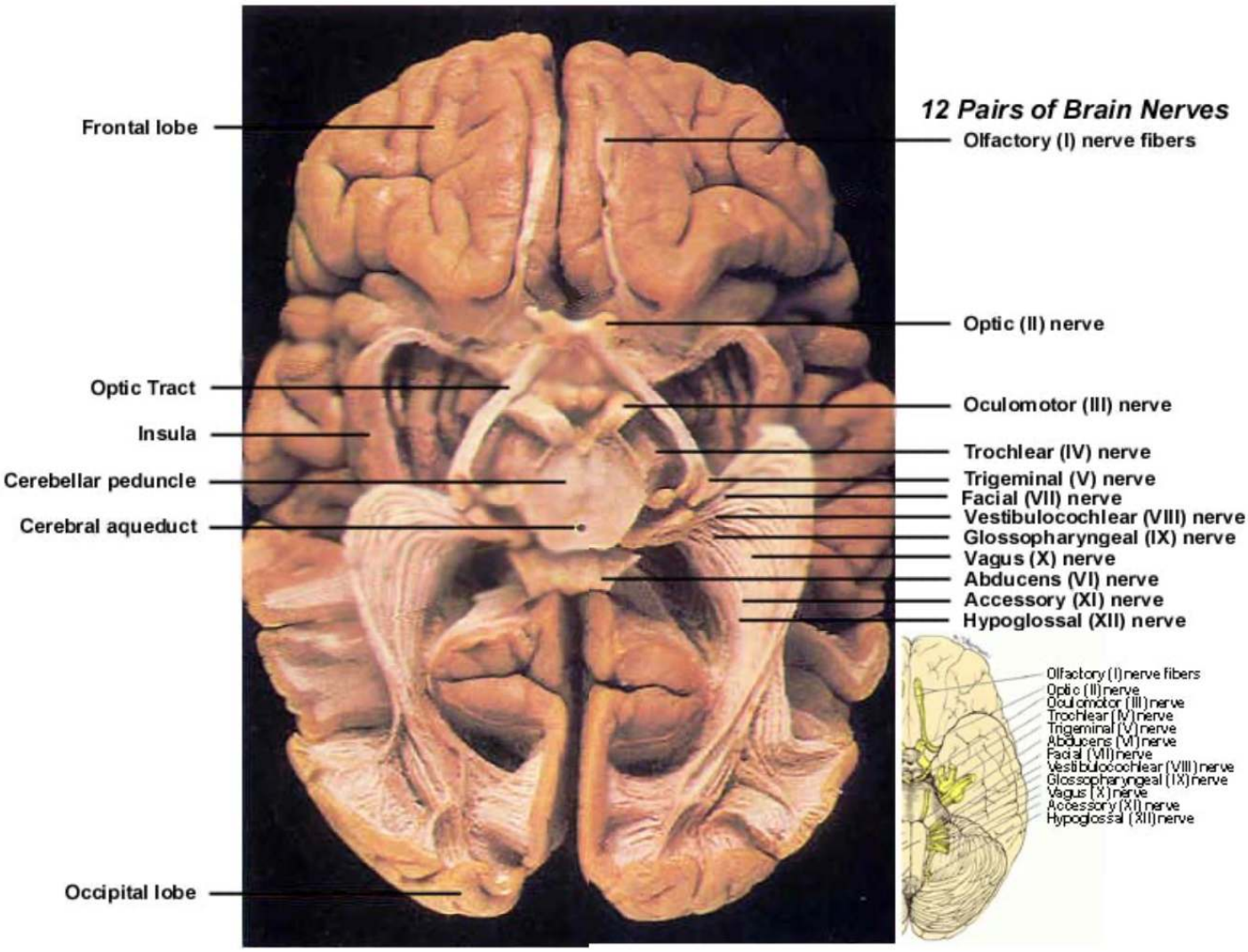
SANCTUARY	HUMAN DISEASES	CHARACTER
Sin/Sinner	Sickness	Defects Deficiencies
Door of sanctuary	Attacks the body	Knowledge/evil
North side - offering	Natural Remedies	Born again
Transferred to sanct.	Healing/ requires patience	Filled with the Holy Spirit
Different Sacrifices	Diff. Treatments	Diff. therapies

Court and Holy Place: Twice a day - Confession and forgiveness

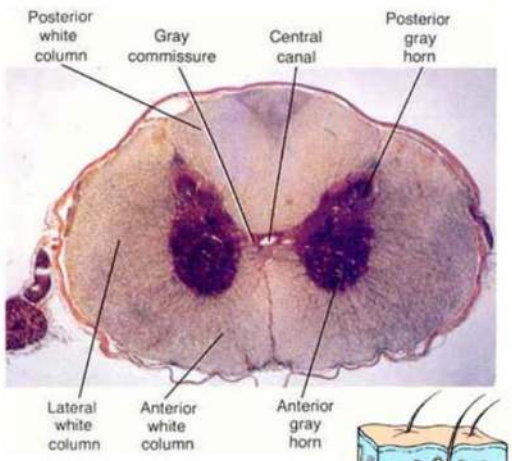
Most Holy Place: Once a year - antitype: Daniel 8:14
Purification of the Mind/blotting out of sins

Second Coming of Jesus: Change of body - (immortal/incorruptible)

After the fall "the nerves became the channels for Satan's electric currents by which he cast his spell over the bodies and souls of men." Evangelism, p. 609



Spinal Nerve Impulse Conduction



Basic Physiology

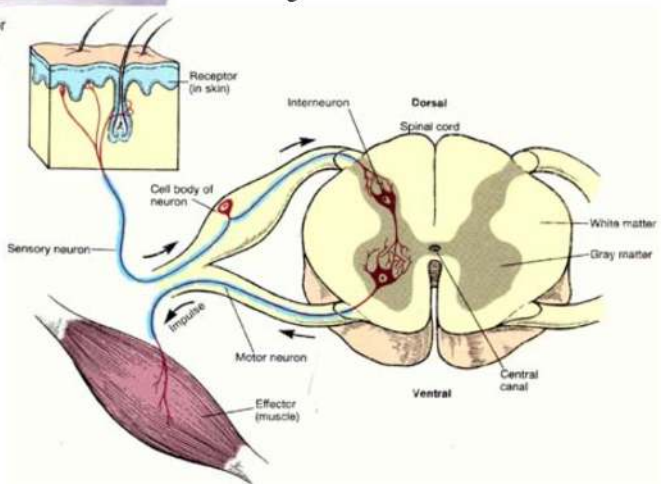
Spinal Nerve Impulse Conduction

The human nervous system consists of billions of nerve cells (or neurons) plus supporting (neuroglial) cells. Neurons are able to respond to stimuli (such as touch, sound, light, and so on), conduct impulses, and communicate with each other (and with other types of cells like muscle cells).

Nerve conduction is an electrochemical process, which means that it uses electricity made with chemical molecules. In other words, the electricity in the brain is not produced by electrons flowing the way they do through a household electrical wire.

The nucleus of a neuron is located in the cell body. Extending out from the cell body are processes called dendrites and axons. These processes vary in number and relative length but always serve to conduct impulses (with dendrites conducting impulses toward the cell body and axons conducting impulses away from the cell body).

Neurons can respond to stimuli and conduct impulses because a membrane potential is established across the cell membrane. In other words, there is an unequal distribution of ions (charged atoms) on the two sides of a nerve cell membrane.
http://people.eku.edu/ritchisong/301notes2.htm



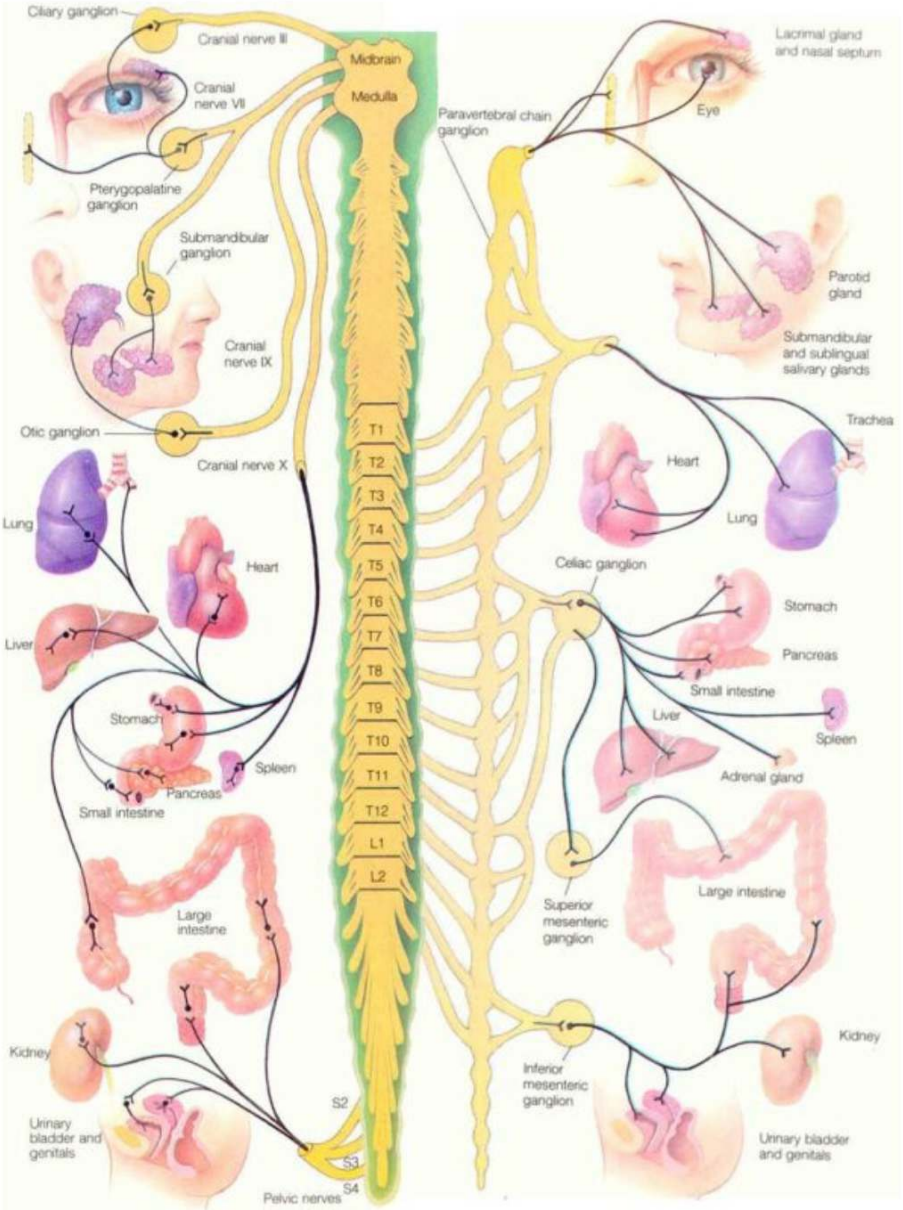
Nerves Communication with Body Organs

"The violation of physical law and the consequence, human suffering, have so long prevailed that men and women look upon the present state of sickness, suffering, debility, and premature death as the appointed lot of humanity...The vital forces have been greatly weakened by the indulgence of appetite and lustful passion." Fundamentals of Christian Education, p. 23

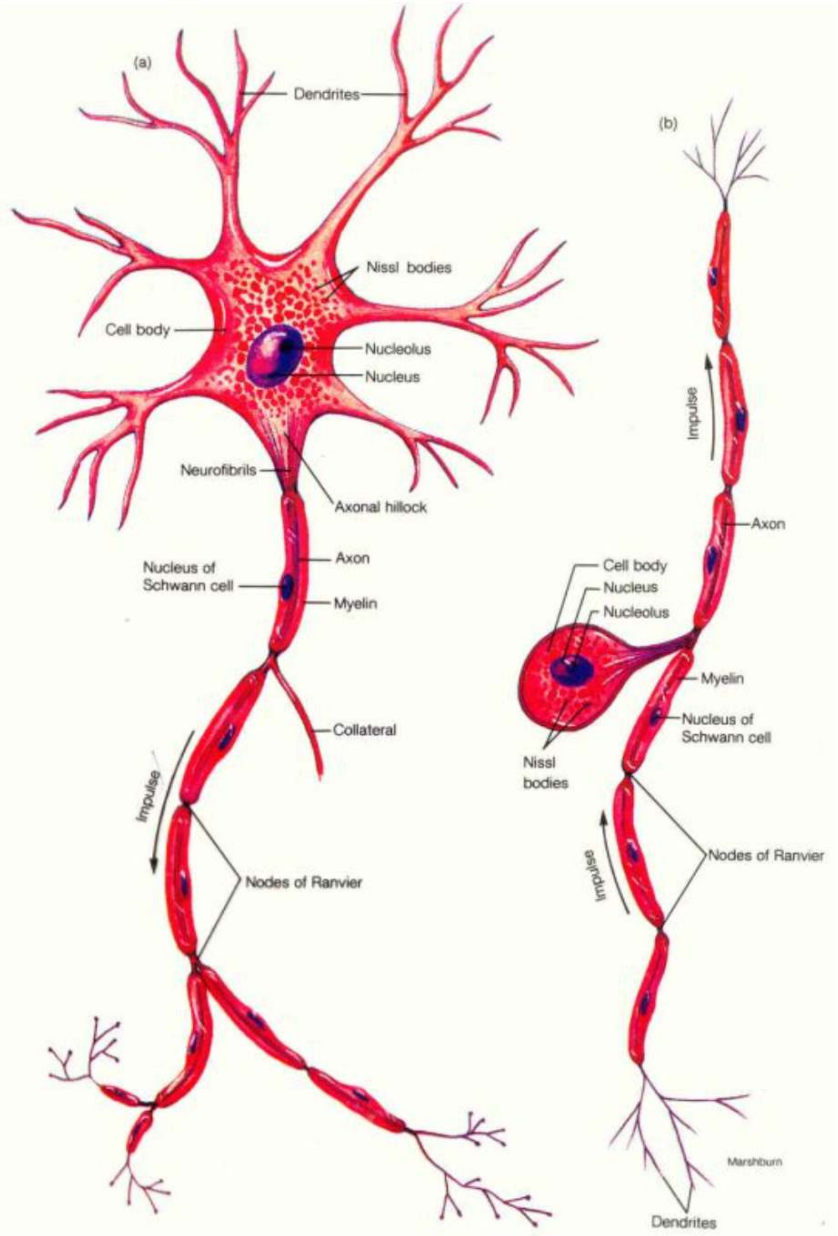
Nerve Pathway Complex

11 Body Systems

1. Nervous
2. Integumentary
3. Skeletal
4. Muscular
5. Respiratory
6. Cardio-Vascular
7. Digestive
8. Urinary
9. Reproductive
10. Lymphatic
11. Endocrine

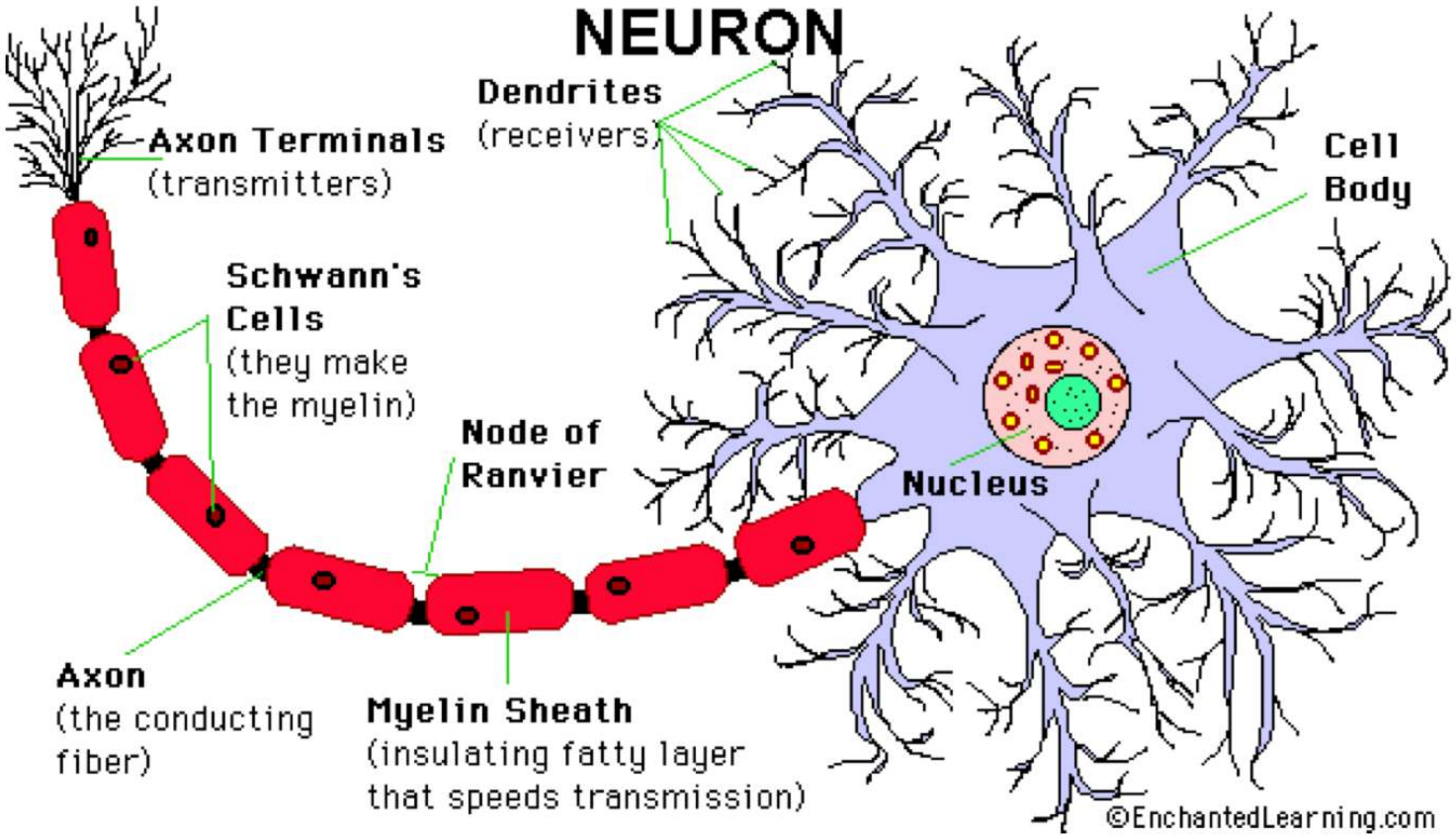


"From all parts of the body, messages are sent to the brain along a series of nerve cells. Recently it has been discovered that a small growth appears on the end of the sending fibre of the nerve cell each time a thought action is repeated. Thus it enlarges so that it becomes easier to repeat that same thought or action. The sobering thought, then, is that every thought, feeling, or act repeated is producing physical and chemical changes in our nerve pathways, either to bless or curse us when these changes have been strongly established."
Dr. Chalmers, Insight Magazine



Electrical Measurement of the Membranes
(Tissue of Muscles or Nerves)

"God endowed man with so great vital force that he has withstood the accumulation of disease brought upon the race in consequence of perverted habits, and has continued for six thousand years. This fact of itself is enough to evidence to us the strength and electrical energy that God gave to man at his creation. It took more than two thousand years of crime and indulgence of base passions to bring bodily disease upon the race to any great extent. If Adam, at his creation, had not been endowed with <u>twenty times as much vital force</u> as men now have, the race, with their present habits of living in violation of nature law, would have become extinct."
Testimonies Vol. 3, p. 138, 139



Physiology – Neuron and Glial Cells

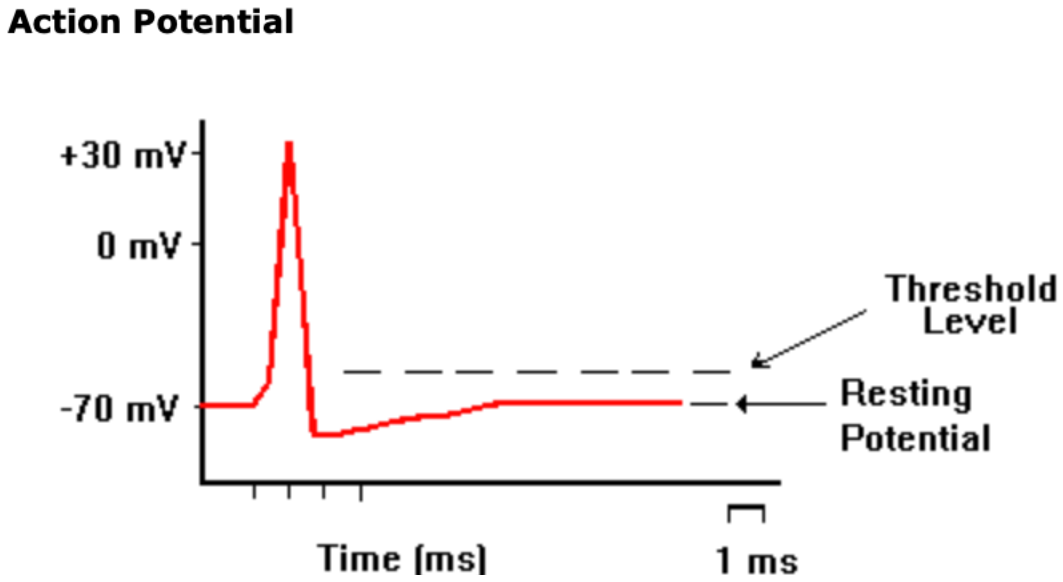
The brain and spinal cord are made up of many cells, including neurons and glial cells. Neurons are cells that send and receive electro-chemical signals to and from the brain and nervous system. There are about 100 billion neurons in the brain. There are many more glial cells; they provide support functions for the neurons, and are far more numerous than neurons.

There are many type of neurons. They vary in size from 4 microns (.004 mm) to 100 microns (.1 mm) in diameter. Their length varies from a fraction of an inch to several feet.

Neurons are nerve cells that transmit nerve signals to and from the brain at up to 200 mph. The neuron consists of a **cell body (or soma)** with branching **dendrites** (signal receivers) and a projection called an **axon**, which conduct the nerve signal. At the other end of the axon, the **axon terminals** transmit the electro-chemical signal across a **synapse** (the gap between the axon terminal and the receiving cell).

The **axon**, a long extension of a nerve cell, and take information away from the cell body. Bundles of axons are known as nerves or, within the CNS (central nervous system), as nerve tracts or pathways. Dendrites bring information to the cell body.
http://www.enchantedlearning.com/subjects/anatomy/brain/Neuron.shtml

Electrical Measurement of the Membranes (Tissue of Muscles or Nerves)



Basic Physiology

Establishment of the Resting Membrane Potential

Membranes are polarized or, in other words, exhibit a RESTING MEMBRANE POTENTIAL. This means that there is an unequal distribution of ions (atoms with a positive or negative charge) on the two sides of the nerve cell membrane. This POTENTIAL generally measures about 70 millivolts (with the INSIDE of the membrane negative with respect to the outside). So, the RESTING MEMBRANE POTENTIAL is expressed as -70 mV, and the minus means that the inside is negative relative to (or compared to) the outside. It is called a RESTING potential because it occurs when a membrane is not being stimulated or conducting impulses (in other words, it's resting).

What factors contribute to this membrane potential?

Two ions are responsible: sodium (Na+) and potassium (K+). An unequal distribution of these two ions occurs on the two sides of a nerve cell membrane because carriers actively transport these two ions: sodium from the inside to the outside and potassium from the outside to the inside. AS A RESULT of this active transport mechanism (commonly referred to as the SODIUM - POTASSIUM PUMP), there is a higher concentration of sodium on the outside than the inside and a higher concentration of potassium on the inside than the outside.

Action Potential

An action potential is a very rapid change in membrane potential that occurs when a nerve cell membrane is stimulated. Specifically, the membrane potential goes from the resting potential (typically -70 mV) to some positive value (typically about +30 mV) in a very short period of time (just a few milliseconds).

Source:
http://faculty.washington.edu/chudler/ap.html
http://people.eku.edu/ritchisong/301notes2.htm

The 7 major Electrolytes in Human Body: 4 Positive (+) – 3 Negative (-)

- Sodium (Na+)
- Potassium (K+)
- Magnesium (Mg++)
- Calcium (Ca++)
- Chloride (Cl-)
- Phosphate (HPO4–)
- Bicarbonate (HCO3-)

Electrolytes are minerals in your body that have an electric charge. They are in your blood, urine, tissues, and other body fluids. Electrolytes are important because they help

- Balance the amount of water in your body
- Balance your body's acid/base (pH) level
- Move nutrients into your cells
- Move wastes out of your cells
- Make sure that your nerves, muscles, the heart, and the brain work the way they should

Sodium, potassium, calcium, magnesium, chlorine, phosphate and bicarbonate are all electrolytes. You get them from the foods you eat and the fluids you drink.

The levels of electrolytes in your body can become too low or too high. This can happen when the amount of water in your body changes. The amount of water that you take in should equal the amount you lose. If something upsets this balance, you may have too little water (dehydration) or too much water (over-hydration). Some medicines, vomiting, diarrhea, sweating, and liver or kidney problems can all upset your water balance.

Treatment helps you to manage the imbalance. It also involves identifying and treating what caused the imbalance. https://medlineplus.gov/fluidandelectrolytebalance.html

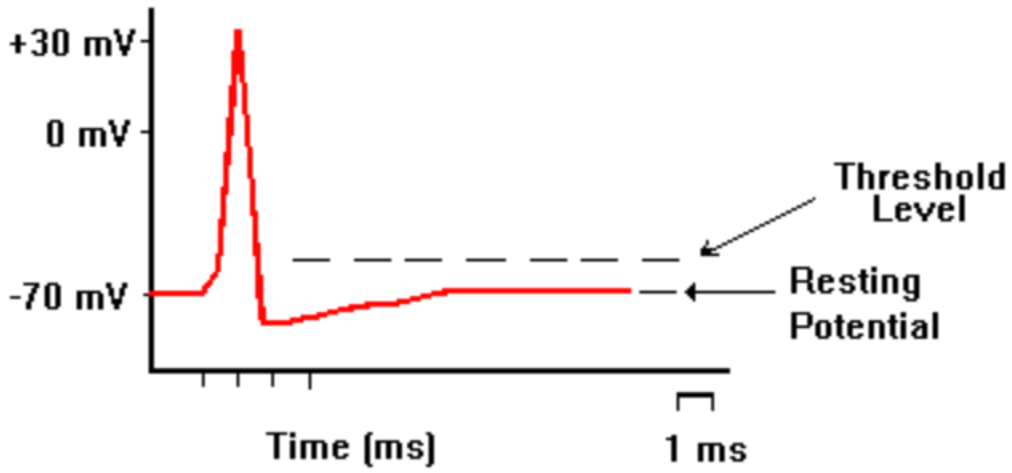
Electrical Measurement of the Membranes (Tissue of Muscles or Nerves)

"God endowed man with so great vital force that he has withstood the accumulation of disease brought upon the race in consequence of perverted habits, and has continued for six thousand years. This fact of itself is enough to evidence to us the strength and electrical energy that God gave to man at his creation. It took more than two thousand years of crime and indulgence of base passions to bring bodily disease upon the race to any great extent. If Adam, at his creation, had not been endowed with twenty times as much vital force as men now have, the race, with their present habits of living in violation of nature law, would have become extinct." Testimonies Vol. 3, p. 138, 139

"Electrical measurements indicate that the inside of the membrane (of muscle or nerve) becomes +30 mV with respect to the outside. Thus, the potential inside the membrane changes from -70mV to 0 mV to +30 mV."

God endowed man at creation with 20 times as much vital force as man now has:
20 x 30 mV = 600 mV of vital force at creation

Action Potential



Note: Voltmeter is used to analyze the electrical voltage of the tissue of muscles or nerves

Every child since Adam sinned is born like this:
The lower power controlling the higher power.

PART II: BRAIN NERVES UNDER ATTACK

5 CONSEQUENCES OF MAN SEPARATION FROM GOD:
1st Man became the habitation of demons
2nd Man's faculties were perverted
3rd Man's lower nature rules the higher
4th Man's sinful mind is characterized by selfishness
5th Man inherits a sinful nature

1st CONSEQUENCE:
Man became the habitation of demons.
"And when He had come out of the boat, immediately there met Him from out of the tombs a man with an unclean spirit... But when he saw Jesus afar off, he ran and worshipped Him, and cried with a loud voice, and said, "What have I to do with Thee, Jesus, Thou Son of the Most High God? I adjure Thee by God that Thou torment me not!" For He had said unto him, "Come out of the man, thou unclean spirit. "And Jesus asked him, "What is thy name?" And he answered, saying, "My name is Legion, for we are many." And he besought Him much that He would not send them away out of the country. Now there was there nigh unto the mountains a great herd of swine feeding. And all the devils besought Him, saying, "Send us into the swine, that we may enter into them." And forthwith Jesus gave them leave. And the unclean spirits went out and entered into the swine; and the herd ran violently down a steep place and into the sea (they were about two thousand), and were choked in the sea." Mark 5: 2, 6-13

CHAINED TO HIS CAR AS CAPTIVES
"The deception of sin had reached its height. All the agencies for depraving the souls of men had been put in operation. The Son of God, looking upon the world, beheld suffering and misery. With pity He saw how men had become victims of satanic cruelty. He looked with compassion upon those who were being corrupted, murdered, and lost. They had chosen a ruler who chained them to his car as captives. Bewildered and deceived, they were moving on in gloomy procession toward eternal ruin,--to death in which is no hope of life, toward night to which comes no morning... Such was the prospect upon which the world's Redeemer looked. What a spectacle for Infinite Purity to behold!" Desire of Ages, p. 36.

LIKE AN ELECTRIC SHOCK

"We have great victories to gain, and a heaven to lose if we do not gain them. The carnal heart must be crucified; for its tendency is to moral corruption, and the end thereof is death. Nothing but the life-giving influences of the gospel can help the soul. Pray that the mighty energies of the Holy Spirit, with all their quickening, recuperative, and transforming power, may fall like an electric shock on the palsy-stricken soul, causing every nerve to thrill with new life, restoring the whole man from his dead, earthly, sensual state to spiritual soundness." Testimonies, Vol. 5, p. 267.

VISION OF FREEDOM

"Satan presented to Eve, a freedom and bliss for them to enjoy which they never conceived was possible." Evangelism, p. 609.

LOSS OF POWER OF SELF-CONTROL

"One of the most deplorable effects of the original apostasy was the loss of man's power of self-control. Only as this power is regained, can there be real progress. The body is the only medium through which the mind and the soul are developed for the upbuilding of character. Hence it is that the adversary of souls directs his temptations to the enfeebling and degrading of the physical powers. His success here means the surrender to evil of the whole being. The tendencies of our physical nature, unless under the dominion of a higher power, will surely work ruin and death." Counsels on Diet and Foods, p. 73.

SATAN TOOK POSSESSION OF MAN

"Satanic agencies took possession of men. The bodies of human beings, made for the dwelling place of God, became the habitation of demons. The senses, the nerves, the organs of men were worked by supernatural agencies in the indulgence of the vilest lust. The very stamp of demons was impressed upon the countenances of men. Human faces reflected the expression of the legions of evil with which men were possessed." Ministry of Healing, p. 142.

NERVES UNDER THE CONTROL OF DEMONS

"Imagination and nerves have been under the control of demons" Testimonies Vol. 3, p. 417.

BRAIN NERVES POWER DESTROYED

"Man, the noblest being upon the earth, formed in the image of God, transforms himself into a beast! He makes himself gross and corrupt... degrading sin... is enervating the system and destroying the brain nerve power. The sensitive nerves of the brain have lost their healthy tone by morbid excitation to gratify... unnatural desire for sensual indulgence. The brain nerves which communicate with the entire system are the only medium through which Heaven can communicate to man and affect his inmost life. Whatever disturbs the circulation of the electric currents in the nervous system lessens the strength of the vital powers, and the result is a deadening of the sensibilities of the mind." Testimonies Vol. 2, p.347.

SATAN EXPERIMENTS WITH THE PROPERTIES OF THE HUMAN MIND

"The enemy is a master worker, and if God's people are not constantly led by the Spirit of God, they will be snared and taken. For thousands of years Satan has been experimenting upon the properties of the human mind, and he has learned to know it well. By his subtle workings in these last days, he is linking the human mind with his own, imbuing it with his thoughts; and he is doing this work in so deceptive a manner that those who accept his guidance know not that they are being led by him at his will. The great deceiver hopes so to confuse the minds of men and women, that none but his voice will be heard." Our High Calling, p.110.

SATAN INFLUENCES THE MIND

"Satan is continually seeking to influence human minds by his subtle arts. His is a mastermind, given of God, but prostituted with all its noble capabilities to oppose and to make of no effect the counsels of the Most High." Mind, Character and Personality, Vol. 1, p. 18.

CAPTIVE ACCORDING TO HIS WILL

"In these days when skepticism and infidelity so often appear in a scientific garb, we need to be guarded on every hand. Through this means our great adversary is deceiving thousands and leading them captive according to his will. The advantage he takes of the sciences, sciences which pertain to the human mind, is tremendous. Here, serpent-like, he imperceptibly creeps in to corrupt the work of God." Mind, Character and Personality, Vol. 1, p. 19.

CHANNELS OF SATAN'S ELECTRIC CURRENT

"Satanic agents claim to cure disease. They attribute their power to electricity, magnetism, or the so-called "sympathetic remedies," while in truth they are but channels for Satan's electric currents. By this means he casts his spell over the bodies and souls of men." Evangelism p. 609.

2nd CONSEQUENCE:

Man's faculties were perverted.

"And Cain was very wroth, and his countenance fell. And the LORD said unto Cain, "Why art thou wroth? And why is thy countenance fallen? If thou doest well, shalt thou not be accepted? And if thou doest not well, sin lieth at the door. And unto thee shall be his desire, and thou shalt rule over him. And Cain talked with Abel his brother; and it came to pass, when they were in the field, that Cain rose up against Abel his brother and slew him." Genesis 4:5-8.

MAN LOST HIS FREEDOM BY SUBMITTING HIS WILL TO SATAN

"In creating man, God gave him noble qualities. He endowed him with a well-balanced mind, and made every power of his being harmonious. After the fall there was not given to man another set of faculties. The powers given him before sin entered the world through Adam were high, and their aims holy; all in perfect harmony with the divine mind. The fall did not create in man new faculties, energies, and passions; for this would have been a reflection upon God. It was through disobedience to God's requirements that these powers were perverted; the affections were misplaced, and turned from the high and holy purpose to a lower aim and to meet a lower standard... Originally man's affections were in perfect obedience to God's will; but they have been perverted, misused, and degenerated by disobedience...The faculties... have been warped in a wrong direction" Review and Herald, March 1, 1887, p. 129.

AFTER THE FALL, SATAN WAS PERMITTED TO MOLD MAN'S WILL

"The will of man is aggressive, and is constantly striving to bend all things to its purposes... When Satan is permitted to mold the will, he uses it to accomplish his ends. He instigates theories of unbelief, and stirs up the human heart to war against the word of God. With persistent, persevering effort, he seeks to inspire men with his own energies of hate and antagonism to God, and to array them in opposition to the institutions and requirements of heaven and the operations of the Holy Spirit. He enlists under his standard all evil agencies, and brings them into the battlefield

under his generalship to oppose evil against good." Messages to Young People, p. 54.

3rd CONSEQUENCE:
Man's lower nature rules the higher nature.
"For we know that the law is spiritual: but I am carnal, sold under sin. For that which I do I allow not: for what I would, that do I not; but what I hate, that do I. If then I do that which I would not, I consent unto the law that it is good. Now then it is no more I that do it, but sin that dwelleth in me. For I know that in me (that is, in my flesh,) dwelleth no good thing: for to will is present with me; but how to perform that which is good I find not.F or the good that I would I do not: but the evil which I would not, that I do. Now if I do that I would not, it is no more I that do it, but sin that dwelleth in me. I find then a law, that, when I would do good, evil is present with me. For I delight in the law of God after the inward man: but I see another law in my members, warring against the law of my mind, and bringing me into captivity to the law of sin which is in my members." Romans 7:14-23.

THROUGH INTEMPERANCE MAN BECOMES PLAYTHINGS FOR THE ENEMY
"Man, through yielding to Satan's temptations to indulge intemperance, brings the higher faculties in subjection to the animal appetites and passions, and when these gain the ascendancy, man, who was created a little lower than the angels, with faculties susceptible of the highest cultivation, surrenders to the control of Satan. And he gains easy access to those who are in bondage to appetite. Through intemperance, some sacrifice one half, and others two thirds, of their physical, mental, and moral powers, and become playthings for the enemy." Temperance, p. 146

REASON AND INTELLECT SUBJECTED TO APPETITE AND PASSIONS
"Since Adam's fall, the race has been degenerating. God did not create the race in its present feeble condition. This state of things is not the work of Providence, but the work of man; it has been brought about by wrong habits and abuses, by violating the laws that God has made to govern man's existence. Through the temptation to indulge appetite, Adam and Eve first fell from their high, holy, and happy estate. And it is through the same temptation that the race have become enfeebled. They have permitted appetite and passion to take the throne, and to bring into subjection reason and intellect." Fundamentals of Christian Education, p. 23.

VIOLATION OF THE PHYSICAL LAW DEGENERATE IN SUFFERING
"The violation of physical law, and the consequence, human suffering, have so long prevailed that men and women look upon the present state of sickness, suffering, debility, and premature death as the appointed lot of humanity. Man came from the hand of his Creator, perfect and beautiful in form, and so filled with vital force that it was more than a thousand years before his corrupt appetites and passions, and general violations of physical law, were sensibly felt upon the race. More recent generations have felt the pressure of infirmity and disease still more rapidly and heavily with every generation. The vital forces have been greatly weakened by the indulgence of appetite and lustful passion." Fundamentals of Christian Education, p. 23, 24.

4th CONSEQUENCE:
Man's sinful mind is characterized by selfishness.
"Though I speak with the tongues of men and of angels, but have not charity, I am become as sounding brass or a tinkling cymbal. And though I have the gift of prophecy, and understand all mysteries and all knowledge, and though I have all faith so that I could remove mountains, but have not charity, I am nothing. And though I bestow all my goods to feed the poor, and though I give my body to be burned, but have not charity, it profiteth me nothing. Charity suffereth long, and is kind; charity envieth not; charity vaunteth not itself, is not puffed up; doth not behave itself unseemly, seeketh not her own, is not easily provoked, thinketh no evil; rejoiceth not in iniquity, but rejoiceth in the truth; beareth all things, believeth all things, hopeth all things, endureth all things. Charity never faileth...And now abideth faith, hope, charity, these three; but the greatest of these is charity." 1 Corinthians 13:1-7,13.

LUCIFER WANTED GOD'S POWER BUT NOT GOD'S CHARACTER
"The Savior gathered His disciples about Him, and said to them: "If any man desire to be first, the same shall be last of all, and servant of all." There was in these words a solemnity and impressiveness which the disciples were far from comprehending. That which Christ discerned they could not see. They did not understand the nature of Christ's kingdom, and this ignorance was the apparent cause of their contention. But the real cause lay deeper. By explaining the nature of the kingdom, Christ might for the time have quelled their strife; but this would not have touched the underlying cause. Even after they had received the fullest knowledge, any question of precedence might have renewed the trouble. Thus disaster

would have been brought to the church after Christ's departure. The strife for the highest place was the outworking of that same spirit which was the beginning of the great controversy in the worlds above, and which had brought Christ from heaven to die. There rose up before Him a vision of Lucifer, the "son of the morning," in glory surpassing all the angels that surround the throne, and united in closest ties to the Son of God.

Lucifer had said, "I will be like the Most High" (Isa. 14:12, 14); and the desire for self-exaltation had brought strife into the heavenly courts, and had banished a multitude of the hosts of God. Had Lucifer really desired to be like the Most High, he would never have deserted his appointed place in heaven; for the spirit of the Most High is manifested in unselfish ministry. Lucifer desired God's power, but not His character. He sought for himself the highest place, and every being who is actuated by his spirit will do the same. Thus alienation, discord, and strife will be inevitable. Dominion becomes the prize of the strongest. The kingdom of Satan is a kingdom of force; every individual regards every other as an obstacle in the way of his own advancement, or a steppingstone on which he himself may climb to a higher place." Desire of Ages, p. 435, 436.

NONE LIVE TO HIMSELF

"Under God, Adam was to stand at the head of the earthly family, to maintain the principles of the heavenly family. This would have brought peace and happiness. But the law that none "liveth to himself" (Romans 14:7), Satan was determined to oppose. He desired to live for self. He sought to make himself a center of influence. It was this that had incited rebellion in heaven, and it was man's acceptance of this principle that brought sin on earth. When Adam sinned, man broke away from the heaven-ordained center. A demon became the central power in the world. Where God's throne should have been, Satan placed his throne. The world laid its homage, as a willing offering, at the feet of the enemy." Counsels to Teachers, p. 33

SELFISHNESS TOOK THE PLACE OF LOVE

"The transgression of God's law brought woe and death in its train. Through disobedience man's powers were perverted, and selfishness took the place of love. His nature became so weakened that it was impossible for him to resist the power of evil; and the tempter saw being fulfilled his purpose to thwart the divine plan of man's creation and fill the earth with

misery and desolation. Men had chosen a ruler who chained them to his car as captives." Counsels to Teachers, p. 33

CENTERED IN SELF: BANKRUPT FOR ETERNITY

"Whatever the appearance may be, every life centered in self squanders. Whoever attempts to live apart from God is wasting his substance. He is squandering the precious years, squandering the powers of mind and heart and soul, and working to make himself bankrupt for eternity. The man who separates from God that he may serve himself, is the slave of mammon. The mind that God created for the companionship of angels has become degraded to the service of that which is earthly and bestial. This is the end to which self-serving tends." Christ Object Lessons, p. 200 - 201.

IMPORTANCE OF CHARACTER DEVELOPMENT

"A character formed according to the divine likeness is the only treasure that we can take from this world to the next. Those who are under the instruction of Christ in this world will take every divine attainment with them to the heavenly mansions. And in heaven we are continually to improve. How important, then, is the development of character in this life." Christ Object Lessons, p. 332.

SICKNESS AND DISORDER BROUGHT UPON BY OLD AGE:

"Cast me not off in the time of old age; forsake me not when my strength fails.... O God, thou hast taught me from my youth: and hitherto have I declared thy wondrous works. Now also when I am old and grayheaded, O God, forsake me not; until I have shewed thy strength unto this generation, and thy power to every one that is to come." Psalm 71: 9, 17, 18.

UNHAPPY TRAITS OF CHARACTER INCREASE WITH OLD AGE

"David entreated the Lord not to forsake him when he should be old. And why did he thus pray? He saw that most of the aged around him were unhappy and that unhappy traits of character increased especially with age. If persons were naturally close and covetous, they were most disagreeably so in their old age. If they were jealous, fretful, and impatient, they were especially so when aged.

OLD PEOPLE CAN BECOME JEALOUS OF THEIR BEST FRIENDS

David was distressed as he saw that kings and nobles who seemed to have the fear of God before them while in the strength of manhood, became jealous of their best friends and relatives when aged. They were in

continual fear that it was selfish motives which led their friends to manifest an interest for them. They would listen to the hints and the deceptive advice of strangers in regard to those in whom they should confide. Their unrestrained jealousy sometimes burned into a flame because all did not agree with their failing judgment.

OLD PEOPLE SEEM TO LOSE THEIR SELF-CONTROL

David marked that although the lives of some while in the strength of manhood had been righteous, as old age came upon them they seemed to lose their self-control. Satan stepped in and guided their minds, making them restless and dissatisfied. He saw that many of the aged seemed forsaken of God and exposed themselves to the ridicule and reproaches of his enemies. David was deeply moved; he was distressed as he looked forward to the time when he should be aged. He feared that God would leave him and that he would be as unhappy as other aged persons whose course he had noticed, and would be left to the reproach of the enemies of the Lord. With this burden upon him he earnestly prays: "Cast me not off in the time of old age; forsake me not when my strength faileth." "O God, Thou hast taught me from my youth: and hitherto have I declared Thy wondrous works. Now also when I a old and gray-headed, O God, forsake me not; until I have shewed Thy strength unto this generation, and Thy power to everyone that is to come." Psalm 71:9, 17, 18. David felt the necessity of guarding against the evils which attend old age.

COVETOUSNESS IN OLD AGE CAN BE DREADFUL

Their covetousness was dreadful. They often thought that their own children and relatives were wishing them to die in order to take their place and possess their wealth, and receive the homage which had been bestowed upon them. And some were so controlled by their jealous, covetous feelings as to destroy their own children.

MENTAL STRENGTH FAILS IN OLD AGE

It is frequently the case that aged persons are unwilling to realize and acknowledge that their mental strength is failing. They shorten their days by taking care which belongs to their children. Satan often plays upon their imagination and leads them to feel a continual anxiety in regard to their money. It is their idol, and they hoard it with miserly care. They will sometimes deprive themselves of many of the comforts of life and labor beyond their strength, rather than use the means which they have. In this

way they place themselves in continual want, through fear that sometime in the future they shall want. All these fears originate with Satan.

INSANITY CAN SET IN UPON SUBJECT OF MONEY

He excites the organs which lead to slavish fears and jealousies which corrupt nobleness of soul and destroy elevated thoughts and feelings. Such persons are insane upon the subject of money. If they would take the position which God would have them, their last days might be their best and happiest. Those who have children in whose honesty and judicious management they have reason to confide, should let their children make them happy. Unless they do this, Satan will take advantage of their lack of mental strength and will manage for them. They should lay aside anxiety and burdens, and occupy their time as happily as they can, and be ripening up for heaven."
Bible Commentary, vol. 3, 1148 (EGW)

NO ONE FOUND IN HEAVEN THAT IS SELFISH, ROUGH AND UNKIND

"Jesus has gone to prepare mansions for those who are preparing themselves, through His love and grace, for the abodes of bliss. In the family of God in heaven there will not be found one who is selfish. The peace and harmony of the heavenly courts will not be marred by the presence of one who is rough or unkind. He who in this world exalts self in the work given him to do will never see the kingdom of God unless he is changed in spirit, unless he becomes meek and lowly, revealing the simplicity of a little child."
Testimonies, Vol. 8, p. 140.

5th CONSEQUENCE:
Man inherits a sinful nature.

"Have mercy upon me, O God, according to Thy lovingkindness; according unto the multitude of Thy tender mercies, blot out my transgressions. Wash me thoroughly from mine iniquity, and cleanse me from my sin. For I acknowledge my transgressions, and my sin is ever before me. Against Thee, Thee only, have I sinned and done this evil in Thy sight, that Thou mightest be justified when Thou speakest, and be clear when Thou judgest. Behold, I was shaped in iniquity, and in sin did my mother conceive me. Behold, Thou desirest truth in my inward parts; in the hidden part Thou shalt make me to know wisdom. Purge me with hyssop, and I shall be clean; wash me, and I shall be whiter than snow. Make me to hear joy and gladness, that the bones which Thou hast broken may rejoice. Hide Thy

face from my sins, and blot out all mine iniquities. Create in me a clean heart, O God, and renew a right spirit within me. Cast me not away from Thy presence, and take not Thy Holy Spirit from me. Restore unto me the joy of Thy salvation, and uphold me with Thy free Spirit. Then will I teach transgressors Thy ways, and sinners shall be converted unto Thee."
Psalm 51: 1 - 13

MAN'S NATURE HAS A BENT TO EVIL HE CANNOT RESIST ALONE

"Not only intellectual but spiritual power, a perception of right, a desire for goodness, exists in every heart. But against these principles there is struggling an antagonistic power. The result of the eating of the tree of knowledge of good and evil is manifest in every man's experience. There is in his nature a bent to evil, a force which, unaided, he cannot resist. To withstand this force, to attain that ideal which in his inmost soul he accepts as alone worthy, he can find help in but one power. That power is Christ. Cooperation with that power is man's greatest need." Education, p. 29.

UNNATURAL CRAVINGS, SENSUAL IMPULSES, INHERITANCE BY BIRTH

"You must hold fast to those whom you are trying to help, else victory will never be yours. They will be continually tempted to evil. Again and again they will be almost overcome by the craving for strong drink; again and again they may fall; but do not, because of this, cease your efforts. They have decided to make an effort to live for Christ; but their will power is weakened, and they must be carefully guarded by those who watch for souls as they that must give an account. They have lost their manhood, and this they must win back. Many have to battle against strong hereditary tendencies to evil. Unnatural cravings, sensual impulses, were their inheritance from birth. These must be carefully guarded against. Within and without, good and evil are striving for the mastery. Those who have never passed through such experiences cannot know the almost overmastering power of appetite or the fierceness of the conflict between habits of self-indulgence and the determination to be temperate in all things. Over and over again the battle must be fought."
Ministry of Healing, p. 173.

MOTHER'S POWERFUL PRE-NATAL INFLUENCE ON THE BABY

"The thoughts and feelings of the mother will have a powerful influence upon the legacy she gives her child. If she allows her mind to dwell upon her own feelings, if she indulges in selfishness, if she is peevish and

exacting, the disposition of her child will testify to the fact. Thus many have received as a birthright almost unconquerable tendencies to evil. The enemy of souls understands this matter much better than do many parents. He will bring his temptations to bear upon the mother, knowing that if she does not resist him, he can through her affect her child. The mother's only hope is in God. She may flee to Him for strength and grace; and she will not seek in vain."
Adventist Home, p. 241.

MOTHER SHAPING THE MIND AND CHARACTER OF HER CHILD

"She, by whose lifeblood the child is nourished and its physical frame built up, imparts to it also mental and spiritual influences that tend to the shaping of mind and character." Adventist Home, p. 242.

MOTHER AND CHILD: SAME TRAITS OF CHARACTER

"If before the birth of her child she is self-indulgent, if she is selfish, impatient, and exacting, these traits will be reflected in the disposition of the child. Thus many children have received as a birthright almost unconquerable tendencies to evil. But if the mother unswervingly adheres to right principles, if she is temperate and self-denying, if she is kind, gentle, and unselfish, she may give her child these same precious traits of character." Adventist Home, p. 256.

CHILDREN NOT PUNISHED FOR THE PARENTS' GUILT

"Visiting the iniquity of the fathers upon the children unto the third and fourth generation of them that hate Me." It is inevitable that children should suffer from the consequences of parental wrongdoing, but they are not punished for the parents' guilt, except as they participate in their sins. It is usually the case, however, that children walk in the steps of their parents. By inheritance and example the sons become partakers of the father's sin. Wrong tendencies, perverted appetites, and debased morals, as well as physical disease and degeneracy, are transmitted as a legacy from father to son, to the third and fourth generation. This fearful truth should have a solemn power to restrain men from following a course of sin."
Patriarchs and Prophets, p. 306.

SELF-ABUSE IN CHILDREN AND PARENTS: A MORAL POLLUTION

"It is sin, not trial and suffering, which separates God from His people and renders the soul incapable of enjoying and glorifying Him. It is sin that is destroying souls. Moral pollution has done more than every other evil to

cause the race to degenerate. It is practiced to an alarming extent and brings on disease of almost every description. Even very small children, infants, being born with natural irritability of the sexual organs, find momentary relief in handling them, which only increases the irritation, and leads to a repetition of the act, until a habit is established which increases with their growth. These children, generally puny and dwarfed, are prescribed for by physicians and drugged; but the evil is not removed. The cause still exists."
Testimonies Vol. 2, p. 391.

ABUSING MARRIAGE PRIVILEGES

"Parents do not generally suspect that their children understand anything about this vice. In very many cases the parents are the real sinners. They have abused their marriage privileges, and by indulgence have strengthened their animal passions. And as these have strengthened, the moral and intellectual faculties have become weak. The spiritual has been overborne by the brutish. Children are born with the animal propensities largely developed, the parents' own stamp of character having been given to them. The unnatural action of the sensitive organs produces irritation. They are easily excited, and momentary relief is experienced in exercising them. But the evil constantly increases. The drain upon the system is sensibly felt. The brain force is weakened, and memory becomes deficient. Children born to these parents will almost invariably take naturally to the disgusting habits of secret vice. The marriage covenant is sacred, but what an amount of lust and crime it covers! Those who feel at liberty, because married, to degrade their bodies by beastly indulgence of the animal passions, will have their degraded course perpetuated in their children. The sins of the parents will be visited upon their children because the parents have given them the stamp of their own lustful propensities."
Testimonies Vol. 2, p. 391.

BRAIN NERVES POWER SQUANDERED TO GRATIFY BASE, LOW PASSIONS

"Men and women, you will one day learn what is lust and the result of its gratification. Passion of just as base a quality may be found in the marriage relation as outside of it. The apostle Paul exhorts husbands to love their wives "even as Christ also loved the church, and gave Himself for it." "So ought men to love their wives as their own bodies. He that loveth his wife loveth himself. For no man ever yet hated his own flesh; but nourisheth and cherisheth it, even as the Lord the church." It is not pure love which

actuates a man to make his wife an instrument to minister to his lust. It is the animal passions which clamor for indulgence. How few men show their love in the manner specified by the apostle: "Even as Christ also loved the church, and gave Himself for it; that He might [not pollute it, but] sanctify and cleanse it; . . . that it should be holy and without blemish." This is the quality of love in the marriage relation which God recognizes as holy. Love is a pure and holy principle; but lustful passion will not admit of restraint, and will not be dictated to or controlled by reason. It is blind to consequences; it will not reason from cause to effect. Many women are suffering from great debility and settled disease because the laws of their being have been disregarded; nature's laws have been trampled upon. The brain nerve power is squandered by men and women, being called into unnatural action to gratify base passions; and this hideous monster, base, low passion, assumes the delicate name of love."
Testimonies Vol. 2, p. 473.

MORE ANIMAL THAN DIVINE

"Many ...seemed destitute of moral restraint. They were more animal than divine. In fact, they were about all animal. Men of this type degrade the wife whom they have promised to nourish and cherish. She is made an instrument to minister to the gratification of low, lustful propensities. And very many women submit to become slaves to lustful passion; they do not possess their bodies in sanctification and honor. The wife does not retain the dignity and self-respect which she possessed previous to marriage. This holy institution should have preserved and increased her womanly respect and holy dignity; but her chaste, dignified, godlike womanhood has been consumed upon the altar of base passion; it has been sacrificed to please her husband. She soon loses respect for the husband, who does not regard the laws to which the brute creation yield obedience. The married life becomes a galling yoke; for love dies out, and frequently distrust, jealousy, and hate take its place."
Testimonies Vol. 2, p. 474.

WIFE SUBMITS TO BECOME HUSBAND'S SLAVE TO HIS DEPRAVED PASSIONS

"No man can truly love his wife when she will patiently submit to become his slave and minister to his depraved passions. In her passive submission, she loses the value she once possessed in his eyes. He sees her dragged down from everything elevating, to a low level; and soon he suspects that she will as tamely submit to be degraded by another as by himself. He

doubts her constancy and purity, tires of her, and seeks new objects to arouse and intensify his hellish passions. The law of God is not regarded. These men are worse than brutes; they are demons in human form. They are unacquainted with the elevating, ennobling principles of true, sanctified love." Testimonies Vol. 2, p. 474.

PARALYZING INFLUENCE OF THE EVIL ONE

"How many families are blinded by Satan so that they have no sense of his workings, his wiles and deceptions, practiced in their very midst. Parents seem to be stupefied by the paralyzing influence of the evil one, and yet think they are all right. Satan seeks to debase the minds of those who unite in marriage, that he may stamp his own hateful image upon their children. Because they have entered into the marriage relation, many think that they may permit themselves to be controlled by animal passions. They are led on by Satan, who deceives them and leads them to pervert this sacred institution. He is well pleased with the low level which their minds take; for he has much to gain in this direction. He knows that if he can excite the baser passions, and keep them in the ascendancy, he has nothing to be troubled about in their experience; for the moral and intellectual faculties will be subordinate, while the animal propensities will predominate and keep in the ascendancy; and these baser passions will be strengthened by exercise, while the nobler qualities will become weaker and weaker." Testimonies Vol. 2, p. 480.

CHILDREN NEED TO BE TRAINED FOR GOD

"He can mold their posterity much more readily than he could the parents, for he can so control the minds of the parents that through them he may give his own stamp of character to their children. Thus many children are born with the animal passions largely in the ascendancy, while the moral faculties are but feebly developed. These children need the most careful culture to bring out, strengthen, and develop the moral and intellectual powers, that these may take the lead. But the workings of Satan are not perceived; his wiles are not understood. Children are not trained for God. Their moral and religious education is neglected. The animal passions are constantly strengthened, while the moral faculties become enfeebled." Testimonies Vol. 2, p. 480.

BRAIN SEVERELY TAXED BY PRACTICE OF SECRET HABITS

"The practice of secret habits surely destroys the vital forces of the system. All unnecessary vital action will be followed by corresponding depression.

Among the young the vital capital, the brain, is so severely taxed at an early age that there is a deficiency and great exhaustion, which leaves the system exposed to disease of various kinds."
Child Guidance, p. 444.

FOUNDATIONS LAID FOR VARIOUS DISEASES LATER IN LIFE

"If the practice is continued from the ages of fifteen and upward, nature will protest against the abuse she has suffered, and continues to suffer, and will make them pay the penalty for the transgression of her laws, especially from the ages of thirty to forty-five, by numerous pains in the system and various diseases, such as affection of the liver and lungs, neuralgia, rheumatism, affection of the spine, diseased kidneys, and cancerous humors. Some of nature's fine machinery gives way, leaving a heavier task for the remaining to perform, which disorders nature's fine arrangement; and there is often a sudden breaking down of the constitution, and death is the result." Child Guidance, p. 444.

THE RESULTS OF SELF-ABUSE IN WOMAN

"Females possess less vital force than the other sex, and are deprived very much of the bracing, invigorating air, by their in-doors life. The results of self-abuse in them is seen in various diseases, such as catarrh, dropsy, headache, loss of memory and sight, great weakness in the back and loins, affections of the spine, the head often decays inwardly. Cancerous humor, which would lay dormant in the system their life-time, is inflamed, and commences its eating, destructive work. The mind is often utterly ruined, and insanity takes place."
Testimonies on Sexual Behavior, Adultery and Divorce, p. 122.

CHILDREN INCEST

"God charges adultery against everyone who does these things (self-abuse) and all who will communicate these vile practices to another are polluting that soul with vile imaginations... leading youths into this habit of self-abuse... given them the fruit of the tree of the knowledge (of good and evil), and every evil communicated is causing them to partake of the tree of knowledge which God has forbidden to be eaten. How can I frame words to express the enormity of this awful sin?... If I were forced to choose whether these children should be exposed to these temptations, educated in these evil practices, or be cut down by death, I would say, Let them die in their innocency. Let them not be corrupted by eating the apples of Sodom. Your moral taste is so perverted that it will ruin yourself and ruin many souls if

you do not turn square about. Educate yourself to a different train of thought. Put no confidence in yourself. Educate your mind to study the Word of God. Study it with your whole heart and pray much. Everlasting life is worth a lifelong, persevering effort."
Letter 106a, 1896.

MASTURBATION AND INSANITY

"In his scholarly study on "Masturbatory Insanity; The History of an Idea," Journal of Mental Science 108:1, Jan. 1962, E.H. Hare refers to a study of 500 patients admitted consecutively to the Iowa State Psychopathic Hospital. He states that the authors of the study, Malamud, W. and Palmer, G., "The Role Played by Masturbation in the Causation of Mental Disturbances", Journal of Nervous and Mental Disorders, 76:220, 1932, found that in twenty-two cases masturbation was "apparently the most important cause of disorder."

Writing of masturbation in their Adolescent Development Adjustment, McGraw-Hill Book Company, 1965, Lester C. and Alice Crow conclude: "The effects of this form of sex perversion are not yet fully known."

THE ZINC CONNECTION WITH THE BRAIN

Dr. David Horrobin, an M.D. and Ph.D. from Oxford University, states: "The amount of zinc in semen is such that one ejaculation may get rid of all the zinc that can be absorbed from the intestines in one day. This has a number of consequences. Unless the amount is replaced by an increased dietary intake, repeated ejaculation may lead to a real zinc deficiency with various problems developing, including impotence."

"It is even possible, given the importance of zinc for the brain, that 19th century moralists were correct when they said that repeated masturbation could make one mad!"
Zinc, Vitabooks: St. Albans, Vermont, 1981, p.8

This statement is similar to that made by Carl C. Pfeiffer, Ph. D., M.D., in his book on zinc. He declares: "We hate to say it, but in a zinc-deficient adolescent, sexual excitement, and excessive masturbation might precipitate insanity."
Zinc & Other Micro-Nutrients, Keats New Canaan, Conn. 1978, p. 45

"The total content of zinc in the adult human body averages almost 2 g. This is approximately half the total iron content and 10 to 15 times the total body copper. In the brain, zinc is with iron, the most concentrated metal. The highest levels of zinc are found in the hippocampus in synaptic vesicles, boutons, and mossy fibers. Zinc is also found in large concentration in the choroid layer of the retina which is an extension of the brain. Zinc plays an important role in axonal and synaptic transmission and is necessary for nucleic acid metabolism and brain tubulin growth and phosphorylation.

Lack of zinc has been implicated in impaired DNA, RNA, and protein synthesis during brain development. For these reasons, deficiency of zinc during pregnancy and lactation has been shown to be related to many congenital abnormalities of the nervous system in offspring. Furthermore, in children insufficient levels of zinc have been associated with lowered learning ability, apathy, lethargy, and mental retardation. Hyperactive children may be deficient in zinc and vitamin B-6 and have an excess of lead and copper.

Alcoholism, schizophrenia, Wilson's disease, and Pick's disease are brain disorders dynamically related to zinc levels. Zinc has been employed with success to treat Wilson's disease, achrodermatitis enteropathica, and specific types of schizophrenia."
Zinc, the brain and behavior. - Braverman ER - Biol Psychiatry, 1982 - Apr;17 (4) : 513-32 - https://www.ncbi.nlm.nih.gov/pubmed/7082716
(See article in File 11, p. 42)

NOTE:
Not all medical authorities would agree with these conclusions, yet it is significant that there are some whose study and research have led them to opinions which are compatible with the teachings of the Bible Companions as written by Author, E.G. White. For further study, see E.G. White, Child Guidance, pp. 439-456.

History of Zinc as Related to Brain Function
(See article in File 11, p. 43-62)

Zinc: Absorption and Role in Gastrointestinal Metabolism and Disorders
(See article in File 11, p. 71-82)

DANGER OF ALL OTHER MORAL SEXUAL PERVERSIONS (SODOMY)
"Be fruitful and multiply." Genesis 1:28.
"Obey and live, disobey and die."

"Reproduction is the mechanism by which the thread of life is sustained. In one sense, reproduction is the process by which a single cell duplicate its genetic material, allowing an organism to grow and repair itself; thus, reproduction maintains the life of the individual. But reproduction is also the process by which genetic material is passed from generation to generation. In this regard, reproduction maintains the continuation of the species"
Principles of Anatomy and Physiology, Harper Collins Pub. p. 879

MALE SEMINAL FLUID
"The male seminal fluid is a mixture of sperm and secretion of the seminal vesicles, prostate gland, and bulbourethal glands. The average volume of semen for each ejaculation range is 2.5 to 5 ml, and the average range of spermatozoa ejaculated is 50 to 150 million/ml. When the number of spermatozoa falls below 20 million/ml, the male is likely to be infertile...

Semen has a slightly alkaline pH of 7.20 to 7.60. The prostatic secretion gives semen a milky appearance and fluids from the seminal vesicles and bulbourethal glands give it a mucoid consistency {mucus like}. Semen provides spermatozoa with a transportation medium and nutrients. It neutralizes the acid environment of the male urethra and the female vagina. It also contains enzymes that activate sperm after ejaculation.

Semen contains an antibiotic, seminalplasmin, that has the ability to destroy a number of bacteria. Since both semen and the lower female reproductive tract contain bacteria, the antibiotic activity of seminalplasmin may keep these bacteria under control to help ensure fertilization.

Once ejaculated into the vagina liquid semen coagulates rapidly because of a clothing enzyme produced by the prostate gland that acts on a substance produces by the seminal vesicle. This clot liquefies in about 5 to 20 minutes because of another enzyme produced by the prostrate gland. Abnormal or delayed liquefaction of coagulated semen may cause complete or partial immobilization of spermatozoa, thus inhibiting their movement through the cervix of the uterus."
Ibid., p. 890, 891

WOMAN MUCOSA

"The vagina serves as a passageway for spermatozoa and the menstrual flow. It is also the receptacle for the penis during coitus, or sexual intercourse, and the lower portion of the birth canal... The mucosa of the vagina contains large amount of glycogen, which upon decomposition produces organic acids. These acids create a low pH environment that retards microbial growth. However, the acidity is also injurious to sperm cells. Semen neutralizes the acidity of the vagina to ensure survival of the sperm." Ibid., p. 905, 906.

WOMAN MENSTRUAL TOXIN

"Continence during genital bleeding also protects the man, particularly in cases of phimosis (abnormal narrowing of the preputial orifice, frequently found with diabetes) when scrupulous penile hygiene is difficult. We know that menstrual blood contains larger quantities of such irritants as choline, arsenic and creatinine. Some researchers have discovered a "menotoxin" which has a toxic effect on plants. Smith has carried out experiments on what he has called "menstrual toxin," a euglobulin produced by cell necrosis, and has shown that it causes hemorrhaging, edema and even death in some cases when inoculated in animals. Menstrual blood can also increase the virulence of female genital microbes, including gonococcus and herpes. (It is known that menstruation promotes the recurrence of catamenial herpes.) The male foreskin is very susceptible to all such irritants, which can cause cancer of the glans. This is virtually unknown in circumcised men who follow orthodox religious practices and do not approach their wives while the latter are "unclean."

Menopause A New Approach, Danièle Starenkyj, Orion Publications, p. 52-60. (excerpts)

SEXUALLY TRANSMITTED DISEASES

"The general term sexually transmitted disease (STD) is applied to any of the large group of diseases that can be spread by sexual contact. The group includes conditions traditionally specified as venereal diseases (VD)... such as gonorrhea, syphilis, and genital herpes, and several other conditions that are contracted sexually, or may be contracted otherwise, but are transmitted to a sexual partner."

Ibid., p. 917.

SODOM'S SINS TODAY: SEXUAL PERVERSIONS INCEST, HOMOSEXUALITY, LESBIANISM, BESTIALITY, PORNOGRAPHY, PROSTITUTION AND WORST STILL.

"We are not ignorant of the fall of Sodom because of the corruption of its inhabitants. The prophet has here [Eze.16:49] specified the particular evils which led to dissolute morals. We see the very sins now existing in the world which were in Sodom and which brought upon her the wrath of God, even to her utter destruction." Bible Commentary Vol. 4, p. 1161.

CONCLUSION PART II:

After his separation from his Maker, man did not cease to be a temple but instead, as he chose to become independent from the Holy Spirit, he became an habitation of demons. By submitting his will to Satan and following his direction, man's character of love was replaced by a self-centered character like the character of his new master.

Satan who understood the laws governing the operation of man's mind, immediately took possession of the very channel God had designed to use for communicating with man for the complete, connected and harmonious development of his faculties. Consequently, after man submitted his will to him "the brain nerves fell under the control of demons and became the channel for Satan's electric currents by which he casts his spells over the body and souls of men."

"Refusing to follow in the path of obedience, they transferred their allegiance to Satan. The enemy rejoiced in his success in effacing the divine image from the minds of the people that God has chosen as His representatives." Fundamentals of Christian Education, p, 499. Thus Satan took over the brain nerves and brought disharmony, perversion and destruction. Man became affected and infected by sin: this was his new carnal nature! The lower power were now governing the higher power.

Man's nature(s) and faculties were so completely perverted by this new unholy connection resulting from his own choice, that his offspring inherited a perverted, sinful nature. Adam's first son Cain, killed his brother Abel: first generation of dysfunctional family. It was natural for Cain to follow his depraved inclinations and passions in subjecting the higher center of his mind to the lower. Sin had brought a change of relationship which caused a perversion of faculties, rather than a transaction in which certain holy faculties were exchanged for unholy faculties.

Biol Psychiatry
1982 Apr;17(4):513-32.

Zinc, the brain and behavior

C C Pfeiffer, E R Braverman

PMID: 7082716

Abstract

The total content of zinc in the adult human body averages almost 2 g. This is approximately half the total iron content and 10 to 15 times the total body copper. In the brain, zinc is with iron, the most concentrated metal. The highest levels of zinc are found in the hippocampus in synaptic vesicles, boutons, and mossy fibers. Zinc is also found in large concentrations in the choroid layer of the retina which is an extension of the brain. Zinc plays an important role in axonal and synaptic transmission and is necessary for nucleic acid metabolism and brain tubulin growth and phosphorylation. Lack of zinc has been implicated in impaired DNA, RNA, and protein synthesis during brain development. For these reasons, deficiency of zinc during pregnancy and lactation has been shown to be related to many congenital abnormalities of the nervous system in offspring. Furthermore, in children insufficient levels of zinc have been associated with lowered learning ability, apathy, lethargy, and mental retardation. Hyperactive children may be deficient in zinc and vitamin B-6 and have an excess of lead and copper. Alcoholism, schizophrenia, Wilson's disease, and Pick's disease are brain disorders dynamically related to zinc levels. Zinc has been employed with success to treat Wilson's disease, achrodermatitis enteropathica, and specific types of schizophrenia.

Symposium: Trace Element Nutrition and Human Health
History of Zinc as Related to Brain Function1

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ABSTRACT
Zinc (Zn) is essential for synthesis of coenzymes that mediate biogenic-amine synthesis and me- tabolism. Zn from vesicles in presynaptic terminals of certain glutaminergic neurons modulates postsynaptic N-methyl-D-aspartate (NMDA) receptors for glutamate. Large amounts of Zn released from vesicles by seizures or ischemia can kill postsynaptic neurons. Acute Zn deficiency impairs brain function of experimental animals and humans. Zn deficiency in experimental animals during early brain development causes malformations, whereas deficiency later in brain development causes microscopic abnormalities and impairs subsequent function. A limited number of studies suggest that similar phenomena can occur in humans. J. Nutr. 130: 496S–502S, 2000.

KEY WORDS: ● zinc ● brain ● hippocampus ● neurotransmission ● cognition

Knowledge of the relationship of zinc nutriture to brain development and function has come from research in several disciplines. Many advances occurred in parallel with limited cross-disciplinary communication. In this review we attempt “bridge the gap” and provide a coherent story.

Zinc in brain tissue
Sheline et al. (1943) first reported 65Zn uptake by brain in dogs and mice. Uptake was slower and the amount retained was less than that in other tissues. A decade later, Maske (1955) serendipitously discovered that diphenylthiocarbizone (dithizone) stains a pool of Zn that is strikingly localized. Staining of hippocampal mossy fibers was intense. Subse- quently, Hu and Friede (1968) measured Zn in 24 regions of human brain by atomic absorption spectroscopy. Concentra- tions in hippocampus were highest, but gray matter of the cortex was nearly as rich. White matter had the lowest con- centrations. Concentrations of Zn in newborn brain were lower than in adults.

Soon after Maske, McLardy (1960) found Zn in mossy-fiber “giant” boutons. Later, he reported several other Zn-contain- ing fiber systems (McLardy 1970). After McLardy (1960), von Euler (1962) found that bathing the surface of the hippocam- pus with H2S-saturated saline removed Zn and changed the evoked potential response after electrical

stimulation. He noted that the H2S caused a variety of changes and therefore was cautious in concluding that removal of Zn caused the changes.

Nearly simultaneously with the above anatomical studies, Zeigler et al. (1964) measured the effect of Zn deficiency on the kinetics of Zn in chick brain. Zn deficiency increased the 65 Zn uptake but had no apparent effect on the concentration of stable Zn. Cox et al. (1969) used rats to confirm that Zn deficiency had little effect on the concentration of Zn in brain. He also showed that high intakes of Zn increased the concen- tration of Zn in brain. About a decade later, Wallwork et al. (1983) used weanling rats to confirm that Zn deficiency has little effect on brain Zn, with the exception of a decreased concentration of Zn in the olfactory bulb. In addition, he found that brain copper was increased by Zn deficiency.

Studies by Haug (1967) built on the work of McLardy (1960). With the use of electron microscopy and a modified silver-sulfide stain (Timm 1958), Haug showed electron-dense silver particles that were located within the mossy-fiber giant boutons, evenly distributed, and not in mitochondria. Later, Haug et al. (1971) showed that transection of mossy-fiber axons caused a rapid disappearance of Zn from the vesicles in the presynaptic boutons (terminals).

Nearly two decades after von Euler, Hesse et al. (1979) confirmed that Zn status can affect synaptic responses in the hippocampus. Using Zn-deprived rats, he showed decreases in evoked responses after repeated low frequency stimulation of the dentate gyrus. In contrast, repeated stimulation of com- missural axons did not result in decreased evoked responses. Hesse suggested that his findings were caused by a decrease in vesicle Zn. More recent findings suggest that this is unlikely. Commissural axon terminals were shown to contain as much vesicle Zn as mossy-fiber terminals (Frederickson et al. 1992, Long et al. 1995).

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Shortly after Hesse (1979), Frederickson et al. (1982 and 1983), with the use of stable-isotope dilution mass spectrom- etry, found that 8% of Zn in the hippocampus is in vesicles. Soon after, three groups showed that Zn is released from axon terminals during electrophysiologic activity. Howell et al. (1984) showed that electrical stimulation in vitro caused up- take of 65 Zn tracer by presynaptic terminals of mossy-fiber axons, and that previously incorporated 65 Zn was released. Assaf and Chung (1984) reported similar findings on the basis of the chemical analysis of poststimulation superfusate, and Sloviter (1985) showed by electron microscopy and modified silver stain (Timm 1958) that electrical stimulation decreased vesicle Zn in mossy-fiber axon terminals. About the same time Perez-Clausell and Danscher (1985) showed by electron mi- croscopy and modified silver stain (Timm 1958) that Zn is present in 10% of the clear round vesicles of Gray's Type I (excitatory) synaptic boutons. These authors subsequently showed (Perez-Clausell and Danscher 1986) by in vivo sulfide binding that Zn released from vesicles can move from the synaptic cleft to the extracellular space.

Peters et al. (1987) and Westbrook et al. (1987) showed that vesicle Zn that is released into the synaptic cleft during neuro- transmission modulates N-methyl-D-aspartate (NMDA)4-specific postsynaptic receptors for glutamate in a rapid, dose-dependent and reversible manner. Consistent with Zn having a modulator role, Fukahori et al. (1988) found lower Zn concentrations in the dentate area of the hippocampus of a strain of mice with a high propensity for seizures. Zn deficiency decreased hippocampal Zn and increased seizures, whereas high intakes of Zn increased hippocampal Zn and decreased seizures (Fukahori and Itoh 1990). Mitchell et al. (1990) confirmed that Zn status can affect seizure susceptibility. In vivo chelation of Zn with dithizone increased the sensitivity of rats to kainic acid–induced seizures. Morton et al. (1990) also found that Zn status affected seizure threshold. Subcutaneous administration of Zn decreased noise-induced sei-zures in DBA/2J mice, but had no effect on seizures caused by kainic acid.

Findings of Frederickson et al. (1990) were consistent with vesicle Zn affecting cognition. Reversible chelation of Zn in vivo "produced a time-locked and selective disruption of hip- pocampal-dependent spatial-working memory." Subsequently, Browning et al. (1994 and 1995) found in Guinea pigs that Zn deficiency decreased the concentration of postsynaptic NMDA-specific glutamate-mediated calcium channels in cor-tical synaptosomes.

Palmiter (1996a and 1996b) and Palmiter and Findley (1995) reported specific Zn-transporter (Zn-T) membrane pro-teins. ZnT-1 facilitates Zn efflux from cells; ZnT-2 facilitates Zn uptake by endosomal vesicles; and ZnT-3 in facilitates Zn uptake by the Zn-containing vesicles of axon terminals of glutaminergic neurons.

In vitro studies showed that oxidation of metallothionein (MT) by glutathione disulfide (GSSG) released Zn to specific ligands (Maret 1994 and 1995). This suggests that one func- tion of MT is to serve as a store for Zn. Induction of liver MT by Zn was described nearly three decades ago (Bremner and Davies 1975, Richards and Cousins 1975, 1976a and 1976b, Winge et al. 1975). Soon after, Cherian (1977) showed that Zn bound to liver MT can be released to other ligands. Subsequently, Sas and Pethes (1981) showed that Zn defi-ciency decreases incorporation of 65Zn into brain MT, and Brady (1983) found that the MT concentration in brain of suckling rats is similar to that in kidney and greater than that in heart, lung, spleen and thymus. Ebadi and Swanson (1987) characterized brain MT in rats and Gulati et al. (1987) showed that MT in monkey brain is not inducible by Cd. Later, Hao et al. (1994) reported high concentrations of metallothionein- I (MT-I) mRNA in cerebellum, hippocampus and the ventri-cles. The same year, Gasull et al. (1994) confirmed that Zn status influences MT concentrations and that there are sub- stantial differences in MT-I and MT-II concentrations among different regions of brain. In addition, Masters et al. (1994) showed that the mRNA for isoform MT-III, a metallothionein unique to brain, is present in glutaminergic neurons that have Zn-containing vesicles. They also showed that MT-III in cul- tured cells stimulates Zn uptake. Later, Erickson et al. (1997)) showed that mice lacking the MT-III gene had low Zn con- centrations in hippocampus, whereas, at the same time, their histochemically reactive Zn in presynaptic vesicles appeared similar to that of controls. The MT-III–deficient mice were highly susceptible to kainic acid–induced seizures and postsyn- aptic neuron injury (like other zinc-deficient rodents). In contrast, mice with the extra MT-III gene were resistant to seizures and postsynaptic neuron injury. These findings suggest that MT-III might influence the release of vesicle Zn into the synaptic cleft.

Extension of the in vitro studies, cited above, of the oxi- dation of MT by GSSG (Maret 1994) revealed that certain selenium compounds also release Zn from MT (Jacob et al. 1999). In addition glutathione (GSH) (Jiang et al. 1998b) and ATP (Jiang et al. 1998a) facilitate Zn release by

GSSG. In addition, oxidation of certain Zn-binding ligands by GSH releases Zn to thionein (Maret et al. 1999).

Churchich et al. (1989) reported that Zn-ATP is required by pyridoxal (PL) kinase for the formation of pyridoxal-5- phosphate (PLP). Subsequently, Yamada et al. (1990) and Nakano and McCormick (1991) found that Zn-ATP is also required by flavokinase for synthesis of flavin mononucleotide (FMN), the precursor of FAD. PLP and FAD are coenzymes for biogenic-amine synthesis (Dakshinamurti et al. 1990) and monoamine oxidase (MAO) metabolism, respectively (Hsu et al. 1988). The susceptibility of these processes to Zn deficiency is unknown.

High concentrations of extracellular Zn can kill neurons. Yokoyama et al. (1986) found that 30 mol/L or more of Zn in tissue culture killed neurons. Soon after, Frederickson et al. (1988 and 1989) reported the toxicity of Zn for neurons in vivo. With the use of a quinoline fluorescence technique, they found that kainic acid–induced seizures caused loss of Zn from the presynaptic axon terminals of hippocampal mossy fibers and that, coincidentally, the postsynaptic neurons showed intense fluorescence for Zn and signs of degeneration. Soon after, Tonder et al. (1990) found similar abnormalities in rats that had been subjected to cerebral ischemia. Recently, Choi (1996), Sensi et al. (1997), Yin and Weiss (1995) and Yin et al. (1998) suggested mechanisms whereby Zn enters postsyn- aptic neurons. They include passage through voltage-gated calcium channels, transporter-mediated exchange with intra- cellular sodium, passage through NMDA receptor– gated channels and penetration through calcium-permeable -ami- no-3-hydroxy-5-methyl-4-isoxazole-propionate (AMPA)- or kainate receptor–gated channels.

Other in vitro evidence of the toxicity of Zn was provided by Bush et al. (1993, 1994a, 1994b and 1994c). At physiologic concentrations and pH, Zn complexed with “amyloid protein precursor,” and “A--1– 40,” a component of cerebral amyloid that is present in spinal fluid. A--1–40 solubility was de-creased and resistance of the resulting amyloid to tryptic digestion was increased. Bush suggested that a similar in vivo phenomenon might contribute to dementia.

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4 Abbreviations used: AMPA, -amino-3-hydroxy-5-methyl-4-isoxazole-pro- pionate; EEG, electroencephalogram; FMN, flavin mononucleotide; GSH, gluta- thione; GSSG, glutathione disulfide; MAO, monoamine oxidase; MT, metallothio- nein; NMDA, N-methyl-D-aspartate; NPY, neuropeptide Y; PL, pyridoxal; PLP, pyridoxal-5-phosphate; ZnT, zinc transporter

Brain development

Hurley and Swenerton (1966) first reported that severe Zn deprivation of rats during organogenesis causes brain malfor- mations. They also found decreased DNA synthesis in embry- onic brain tissue (Swenerton et al. 1969). Later, McKenzie et al. (1975) showed that maternal Zn deprivation during the last third of gestation decreased brain DNA. Sandstead et al. (1972) found low 3H-thymidine incorporation into DNA and 35S into protein in Zn-deficient neonatal rats on postnatal d 11. Later, Fosmire et al. (1975) found a decrease in brain polysomes and protein per cell in Zn-deprived pups on post- natal d 5. Consistent with these findings, Duerre et al. (1977) discovered that Zn deficiency impaired the incorporation of 3H-leucine into brain histone- and nonhistone-proteins on postnatal d 10, and Buell et al. (1977) showed that Zn defi- ciency decreased brain growth, DNA, RNA and protein con- centrations in pups, aged 21 d. In addition, division and migration of external granular cells of the cerebellum were retarded. Dvergsten (Dvergsten 1984, Dvergsten et al. 1983, 1984a and 1984b) described the histologic effects of severe Zn deficiency on cerebellum of rat pups, aged 21 d. Granule cell number relative to Purkinje cells was decreased 60%. Den- drite growth of Purkinje, basket and stellate cells was de- creased and the height of the Purkinje cells dendrite arbor and its branching were severely decreased. Consistent with imma- turity, ribosomes were clustered in the basal cytoplasm of Purkinje cells. In addition, asymmetric synapses between par- allel fibers (axons of granule cells) and dendrites of the Pur- kinje, basket and stellate cells were decreased 40%.

Brain function in animals

Williams and Mills (1970) and Chesters and Quarterman (1970) reported cyclic feeding in Zn-deficient rats. Wallwork et al. (1981) and Wallwork and Sandstead (1983) showed that plasma Zn concentrations were inversely related to the cycle and that concentrations of glucose and amino acids in plasma, and amino acids in brain, did not appear related to the cycle. Subsequently, Reeves and O'Dell (1984) found that dietary restriction of tyrosine decreased the concentrations of tyrosine and catecholamines in the hypothalamus and increased the appetite of Zn-deficient rats. More recently, Selvais et al. (1997) found that Zn-deficient Wistar rats had galanin mRNA and increased neuropeptide Y (NPY) mRNA in hypothala- mus. NPY in the suprachiasmatic nuclei of the geniculohypo- thalamic tract was inversely related to the appetite cycle. Zn repletion decreased NPY

mRNA toward normal. In contrast, in Zucker rats, which have high basal NPY, Zn deficiency had no effect on NPY.

Macapinlac et al. (1967) first noted that Zn-deficient squir- rel monkeys were apathetic. Subsequently, Caldwell et al. (1970) found that Zn-deficient rats were more hesitant and made more errors in a simple water maze than the pair-fed control rats. Hesse et al. (1979) confirmed their findings. Subsequently, Gordon et al. (1982) showed that severe Zn deficiency caused less activity and grooming in aged rats (300 d old); Massaro (1982) reported that moderate Zn deprivation impaired complex behaviors; and Valdes et al. (1982) found an association between lateralization of Zn in the brain and spatial preference in rats.

Golub et al. (1994 and 1996) measured effects of “moder- ate” Zn deprivation on behavior of prepubertal and adolescent nonhuman primates. Fifteen weeks of Zn deprivation in pre- pubertal animals decreased plasma Zn but had no apparent effect on growth. “Spontaneous motor activity was lower and performance of a visual-attention task and short-term-memory task were impaired.” In adolescent females, “moderate” Zn deficiency retarded the adolescent growth spurt, and decreased daytime activity and attention.

Halas (Halas et al. 1977a, 1976 and 1980, Halas and Eberhardt 1975, 1977b, 1979, 1983, 1986 and 1987, Halas and Sandstead 1975 and 1980, Lokken et al. 1973) first measured the effects of developmental Zn deprivation in rats. The first experiment found that Zn deprivation of dams throughout lactation (birth to postnatal d 21) caused errors of choice during running of a “Tolman Honzig” maze without affecting the running time of offspring, aged 60 – 80 d (Lokken et al. 1973). The second experiment found that Zn deprivation on d 15–20 of gestation impaired avoidance of shock by young adult male offspring but had no similar effect on female offspring (Halas et al. 1976, Halas and Sandstead 1975). The third experiment found that intrauterine Zn deprivation increased shock-induced aggression in nutritionally rehabilitated 75-d- old female offspring but not in males (Halas et al. 1975 and 1977b). The last experiment differed from all others in that Halas measured the effects of mild maternal Zn deficiency (10 g/g diet) throughout gestation and lactation on subsequent performance of adult offspring (Halas et al. 1986). Pups and dams showed no overt signs of Zn deficiency other than mild growth deficit in pups. After weaning, the pups were fed a complete diet that was adequate in Zn. When tested at

age 100 d, the previously Zn-deprived rats made many more errors in an open 17-arm radial maze than did controls. Penland and Sawler (1987) measured the electroencephalogram (EEG) of rats from Halas' last experiment. In addition to changes in EEG activity in the Zn-deprived group, brain zinc/copper ratios were positively correlated with left-minus-right hemi- sphere asymmetries in the EEG.

Developmental Zn deprivation was also studied in nonhu- man primates. Early studies (Sandstead et al. 1978, Strobel and Sandstead 1984) in a small number of animals found that maternal Zn deprivation in the last third of pregnancy changed maternal-infant interactions and impaired later abil- ity to solve complex problems at about age 2 y; by age 3 y, problem-solving ability was similar to that of controls. More recently, Golub et al. (1995) found that "marginal" Zn depri- vation of dams throughout gestation caused a syndrome of lethargy, apathy and hypoactivity in offspring.

Findings in humans

Zn deficiency from dietary inadequacy was first described among poor Iranian farm boys by Prasad et al. (1961). Subse- quently, the condition was identified among poor Egyptian farm boys who displayed dwarfism, hypogonadism, iron defi- ciency, hookworm and schistosomiasis (Prasad et al. 1963a and 1963b, Sandstead et al. 1967). These patients were similar in appearance to those with severe hookworm that were de- scribed in the first decade of this century by Dock and Bass (1910). Abnormal behaviors occurred in some. In the second decade of this century, the International Health Board of the Rockefeller Foundation (1919) reported an association be- tween hookworm infection and low cognitive performance in U.S. Army recruits and in children from South-Eastern mill towns. The same year Waite and Nelson (1919) found a direct association between the severity of hookworm infection and impaired mental development in children from North Queens- land, Australia. One suspects that Zn deficiency contributed to the cognitive abnormalities described.

Twenty-five years ago Henkin et al. (1975) discovered that severe Zn deficiency impaired neuromotor and cognitive per- formance of adults. He induced Zn deficiency by administra- tion of large doses of histidine, which caused high urinary excretion of Zn. All subjects developed abnormal taste and smell acuity. Some were ataxic, some were depressed, some hallucinated and some developed paranoia. Soon after Hen- kin's report Moynahan (1976) described abnormal behavior in a patient with

acrodermatitis enteropathica, and Kay et al. (1976) found abnormal behaviors in patients with Zn defi- ciency as a result of inadequate parenteral feeding.
Hambidge et al. (1975) reviewed the effects of inadequately treated maternal acrodermatitis enteropathica on offspring. Some infants had brain malformations. Related to these ob- servations, reports from Turkey suggested that low maternal Zn nutriture increased the occurrence of fetal anencephaly (C¸ avdar et al. 1983 and 1988).

Relevant to human fetal development and postnatal risk of behavioral deficits, nearly three decades ago, Jameson (1976) found significantly higher maternal serum Zn concentrations among women who normally delivered mature infants than he found among women who had abnormal deliveries and/or abnormally developed infants. In the latter group, eight infants had congenital malformations. In addition, women with dys- mature infants had significantly lower serum Zn concentra- tions than women who had uncomplicated deliveries of ma- ture infants. Subsequently, Meadows et al. (1983 and 1981) found that low Zn concentrations in maternal and newborn leukocytes were associated with fetal growth stunting. A sub- sequent double-blind randomized placebo-controlled Zn reple- tion trial by Cherry et al. (1989) found significant decreases in premature delivery and a highly significant decrease in the need for respiratory assistance among newborn infants of nor- mal-weight low income black teen-age girls. More recently, Goldenberg et al. (1995) found higher birth weight and larger head size among infants of Zn-repleted low income mothers. Kirksey et al. (1991 and 1994) first reported relationships between the maternal diet during pregnancy and postnatal behavior of infants. Mother-baby pairs were studied in an Egyptian village. Maternal consumption of foods derived from animals that were rich in Zn was positively associated with higher neonatal attention scores on the Brazelton Neonatal Development Assessment Scale. At 6 mo of age, motor per- formance scores on the Bayley Scales of Infant Development were inversely associated with maternal intakes of Zn from plants, dietary phytate and fiber during pregnancy.

Effects of postnatal Zn nutriture on infant development were reported by Friel et al. (1993). Linear growth and motor development were higher in newborns 1500 g that were given 11 mg Zn/L of formula from birth to 6 mo compared with infants given 6.7 mg Zn/L. Later, Sazawal et al. (1996) re- ported that repletion with 10 mg Zn/d simultaneously with potentially limiting vitamins increased activity and energy expenditure of low income urban

Indian children, aged 12–23 mo. Similarly, Bentley et al. (1997) found that Guatemalan infants given 10 mg Zn/d for 7 mo sat up and played more than infants given placebo. Ashworth et al. (1998) also found that Zn repletion improved behavioral ratings. His subjects were low-birth-weight Brazilian infants, aged 12 mo, who were given 5 mg Zn/d 6 d/wk during the first 8 postnatal weeks. Controls given 1 mg Zn/d lagged behind.

In children Thatcher et al. (1984) found a direct associa- tion between an index of Zn status (hair Zn concentration) and reading performance on a standardized test. In addition, coherence of the frontal lobe EEG was related directly to the concentration of Zn in hair. Consistent with Thatcher, Wachs et al. (1995) found that certain preadolescent behaviors of Egyptian children were associated with the consumption of foods that were derived from animals and are rich in Zn.

Sandstead et al. (1998) and Penland (Penland 1999, Pen- land et al. 1997, 1999a and 1999b) found in three groups of children that repletion of Zn nutriture, in the context of repletion of other potentially limiting micronutrients (Ron- aghy et al. 1974), improved neuropsychological function. The subjects were low income urban (n 740) and rural (n 540) Chinese, aged 6–9 y, and low income urban U.S. Mexican- Americans, aged 6 –9 y (n 240). They participated in 10-wk double-blind, randomized, controlled treatment trials. Neuro- psychological function was assessed by a computerized task set that was configured by Penland (1994) for testing of many facets of neuropsychological function. All studies found that repletion with 20 mg Zn simultaneously with other potentially limiting micronutrients caused the greatest improvement in performance of a complex reasoning task, compared with controls. The Chinese subjects also showed improvement in other dimensions of neuropsychological function. Before these studies Gibson et al. (1989) and Cavan et al. (1993) found no improvement in cognition of low income children, aged 6 –7 y, who were repleted with 10 mg Zn/d. The assessment tool measured global indices of cognition. We suspect the tool was insensitive.

In adults, Henrotte et al. (1977) found that low concen- trations of Zn in RBC were associated with lower frequency of the EEG during hyperventilation. Later he reported an asso- ciation between Type A personality, high resting RBC Zn concentration and low urinary Zn concentration, as contrasted with Type B personality (Henrotte et al. 1985). When Type A subjects were exposed to stress, they excreted more Zn in

their urine than did type B subjects. Goldstein and Pfeiffer (1978) reported that treatment of schizophrenic patients with Zn was followed by a decrease in EEG amplitude (toward normal), in contrast to the effect of placebo. The change was consistent with a decrease in cortical excitability. Subsequently, Tang (1991) reported lower concentrations of Zn in hair from fe- male epileptic patients than from controls. In addition, the occurrence of seizures was associated with low plasma Zn concentrations during the past year.

Three pilot studies suggested that mild Zn deficiency might decrease cognition of adults. Tucker and Sandstead (1984) found decreased memory for digits and decreases in several perceptual tasks in men who were fed diets that provided 3.5 mg Zn/d while they were living in a highly controlled envi- ronment. Darnell and Sandstead (1991) found in 11 ambula- tory women with serum ferritin concentrations 20 g/L, that 8 wk of repletion with 30 mg Zn/d simultaneously with other potentially limiting micronutrients improved short-term visual memory (Wechsler 1981). In contrast, six similar women who were given only micronutrients showed no change in short-term visual memory. Penland (1991) found decreased neuropsychological function in 11 men, aged 21–38 y, who were experimentally deprived of Zn. In random and double-blind trials, they were fed diets that provided 1, 2, 3 or 4 mg Zn/2000 kcal, each for intervals of 35 d (Johnson et al. 1993). The subjects were repleted with 10 mg Zn/d for 35 d at the end of the study. The low Zn diets decreased function similarly. Two psychomotor tasks (tracking and connect-the- dots), two attention tasks (orienting and misdirection), one perceptual task (search-count), three memory tasks (letter, shape and cube recognition) and one spatial task (maze) were impaired.

Relevant to Zn nutriture of the elderly, Burnet (1981) suggested that low Zn nutriture increases the risk of dementia. He based his thesis on the requirement of Zn for DNA syn- thesis and repair (Lieberman and Ove 1962, Lieberman et al. 1963). The more recent findings of Tully et al. (1995) appear to support Burnet’s idea. They found a negative association between the serum Zn concentration 1 y before death and the frequency of “senile” and “diffuse” plaques in the brains of 12 elderly women who were examined postmortem.

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I. Baal-Peor: The Lord of the Opening

Baal: means Lord or Owner and refers to Satan.
Peor: means "Cleft" of "Gap" – from the word pa'ar meaning to open wide.

II. Health Warning:

Oral Sex Increases Cancers of Mouth and Throat in Children and Adult

The cleft or opening to which Peor referred to, was the woman genital part. The goddess Ashtoreth was the representation of the female genital part while Molech was the representation of the male genital part. While, all immoral sexual acts were considered an homage to Baal, the worship of Baal-Peor was considered to be the most obscene.

The temples had dedicated male and female prostitutes (priests and priestess) and anal and oral sex were practiced by same sex or opposite sex in order to commune with Baal-Peor. While male prostitutes participated in the act, only the feminine principle was glorified; man had to sacrifice his manhood to join in the act. In either case, he effeminized himself. This brought glory to Baal-Peor because the worshiper had to abase himself both physically and spiritually before the cleft. The rites of Baal-Peor only exalt the woman principle.

Some have asked us, "Are you saying that acts of sodomy (anal or oral sex) are sinful, even in marriage?" While there are likely a number of mixed messages people give to this question, it is a sin even in a marriage. There are several reasons why.

1. Sodomy is a sin. Similar to the meaning of Peor (Balaam's father), the Hebrew word for Sodom literally means "burning". **Sodomy is defined as "anal or oral copulation with a member of the opposite sex; copulation with a member of the same sex; or bestiality."** The **act is considered sodomy even when it pertains to the opposite sex. Heterosexuals** who participate in this act **are sodomites** by the very definition of the word. It wouldn't take long in reviewing the Scriptures to understand how God feels about sodomy. The Bible is not silent on this topic.

2. It is idolatry. The word "sodomite" in the Old Testament is the word "*qadesh*" which means "male temple prostitute". The female counterpart to that (the word "*qĕdeshah")* is often translated as "harlot" or "whore". Some say that God only disapproved of this act as it related to temple prostitution. **Yet, the**

act itself is an act of idolatry no matter who performs it. One does not have to be a temple whore of Baal for the act to be sinful. On the contrary, one becomes a temple whore of Baal by doing the act. Holding true to the definition of the word sodomy, these temple prostitutes would perform homosexual acts on anyone, regardless of gender. The act itself was the means by which the **participants were joined to or became one with Baal; the act itself was the means of worship by which Baal was sought to cross over and indwell the participants.** Today, music performers entice young and old in the practice of the worship of Baal-Peor with their lyrics, subliminal videos and images. Remember: the act itself was the means by which the participants were joined to or became one with Baal; the act itself was the means of worship by which Baal was sought to cross over and indwell the participants. **This is what the children are indoctrinated in public schools today.**

3. The marriage bed should be kept in honor - Hebrews 13:4. Some assert that there is an **anything goes mentality to intimacy in marriage** because "*the marriage bed is undefiled*." However the Bible prefaces that text by saying that marriage is first honorable. The text also states that fornication and adultery defile the marriage bed. The word for **fornication** is the Greek word *porneia* which means **illicit sexual intercourse**. So sex acts that God deems as illicit are not acceptable just because it is practiced in the confines of a marriage. It defiles the marriage bed which should be held in honor. The question then becomes **are acts of sodomy illicit**?

4. God gives us good gifts - (James 1:17). God does not give us gifts that would cause us harm. Therefore, we can look at the function, purpose, and design of certain acts to determine whether or not these would be considered natural in God's eyes. If a sexual act is ordained by God (i.e. it is natural), then it would have certain **inherent protections for the participants in the act**.

5. Design - The **woman and man** are given **sexual parts** that **physically correlate to and fit each other**. They are designed to meet together naturally, **without forced manipulation**.

6. Protection - God designed **protections** into the body for this interaction. The **lining of the uterus is designed to prevent the semen from entering into the blood stream of the woman**. **God does not provide the same protections for acts of sodomy.** These acts can **disrupt normal bodily functions and cause damage to bodily systems**. There is also an element of danger involved in the act oral sex performed on women that **can lead to**

death. It is not a protected act (in terms of the body's design) the way that sexual intercourse is.

7. Union - Man and woman being joined together sexually become **one flesh only occurs during sexual intercourse**.

8. Procreation - Children can only result during sexual intercourse. We can see by its design, function, and purpose that sexual intercourse between a man and woman is a **natural use** of sex. All of these elements work together to provide a safe, enjoyable, and purposeful interaction. **The same cannot be said for acts of sodomy**.

9. It is uncleanness. Apart from the **physical uncleanness** of the act, there is also a **spiritual component**. Romans Chapter 1 describes **man's degradation** into **reprobation**. [**Confusing reality with fiction** – as **schizophrenia** does to the mind]. Man doesn't just wake up one day reprobate, but there are a series of steps man takes further and further into sin. The sin immediately preceding homosexuality is **men and women dishonoring their bodies** between themselves with uncleanness. The word for "dishonor" in that text is a derivative of the word "honorable" in the Hebrews 13:4 text about marriage. This refers **also to all heterosexual sexual sin (oral copulation, anal copulation, bestiality, etc.).**

10. It is an "unnatural use". Romans 1:26 states, "For this cause God gave them up unto vile affections: for even their women did change the **natural use** into that which is against nature." The word "use" is the Greek word "*chrēsis*" which refers to use of the sexual parts of the woman. Note that there is a "natural" use and an "unnatural" use. What the women were doing with each other sexually was an **unnatural use** of that part of their bodies. Similarly, we are told in Romans 1:27 that the acts performed between the men was **likewise unnatural**. "And *likewise* also the men, **leaving the natural use** of the woman, burned in their lust one toward another; men with men **working that which is unseemly**, and receiving in themselves that recompence of their error which was meet." Romans 1:26-27 not only condemns the **affections** that draw men and women to the same gender (**vile affections**), it also condemns the **acts** that they performed as a result of these desires (**against nature**).

11. It formats the mind to be asexual. The act itself is not gender-specific. In an attempt to validate homosexuality as a norm, Jamake Highwater's book *The Mythology of Transgression: Homosexuality as Metaphor* states how the masculine and feminine depiction of **Baal-Peor represents a bi-gender nature**. He goes on to say: "**During the worship of Baal-Peor, priests dressed as women and priestesses dressed as men.**" The **transgender** cross-dressing is entirely consistent with the asexual nature of the act. **Since it can be performed by anyone who has a mouth, gender becomes irrelevant. It is an intentional blurring of the sexes.** That makes participation in this act a **critical step for Satan to use in preparing man's mind for the acceptance of homosexuality**. God is able to give husbands and wives a fulfilling, exciting, and pleasurable intimate relationship because that is how He **designed** it to be.

We sometimes forget that **sex was God's gift to married people** and He knows what He is doing. **Yet through the worship of Baal-Peor, Satan was able to ensnare the nation of Israel and he is still trying to do the same today.**

II. Cancer, Oral Sex and Presidential Politics: Did Bill Clinton Cause an Increase in Throat Cancer? THE BLOG - July 05, 2012 - Updated Dec 06, 2017

Bryan Fischer's Oral Sex Hypothesis

American sexual behavior – Bryan Fischer is the host of the daily 'Focal Point' radio talk program on AFR Talk, a division of the American Family Association. 'Focal Point' airs live from 1-3 pm Central Time, and is also simulcast on the AFA Channel, which can be seen on the Sky Angel network.

Is Oral Sex A Health Hazard?

Fischer says that oral sex can be bad for your health. Unfortunately, he may be right. With more than 30,000 new cases a year, cancers of the mouth and throat are on the rise, especially among the young. A 2007 study found that people with oropharyngeal cancers were considerably more likely to have had multiple oral sex partners than a cancer free control group. Another study found that oral sex (and even open-mouth kissing) facilitates the transmission of human papillomavirus. (HPV is the malicious family of bugs which can cause genital warts and cancer). But what really got Fischer in a twit was a January 2012 study which found that 7 percent of Americans aged 14 to 69 are infected with oral HPV. This spells trouble as the most common variety of the HPV in people's mouths is also among the most virulent in terms of causing cancer.

Oddly, Fischer neglected to mention another STD that is associated with oral sex — **herpes**. In times past, the **simplex 1** variant of **herpes** was considered a non-sexually transmitted oral form of the virus which caused cold sores around the mouth. A different form, **herpes simplex 2**, was thought to cause the STD, genital herpes. But because of the increased popularity of oral sex, more and more people are showing up at their doctors with **cold sore herpes infections on their genitals**. Indeed, at the University of Wisconsin, the proportion of students' genital sores caused by herpes simplex 1 jumped from **31 percent in 1993** (the year Bill Clinton became president) to **78 percent in 2001** (the year Clinton was replaced by his successor)." Hal Herzog is Professor of Psychology at Western Carolina University.

Oral Sex Linked to Rise in Men's Throat Cancer

BY SUSAN DONALDSON JAMES
Oct. 20, 2010

For years now, doctors have urged young women to be vaccinated against the human papilloma virus (HPV), which is believed to cause cervical cancer. But now, growing research in Europe and the United States is implicating HPV in a rising number of cases of head and neck cancers in men, and many doctors are recommending that all boys be vaccinated as well.

Doctors say that changing sexual behaviors -- earlier sex, more partners and especially oral sex -- are contributing to a new epidemic of orpharyngeal squamous cell cancers, those of the throat, tonsils and base of the tongue. These cancers can be deadly, and are striking men at a younger age and in increasing numbers.

"There's a lag in information," said Dr. John Deeken, a medical oncologist at Georgetown University. "We physicians have done a poor job of advertising the fact that boys and girls should have the vaccine."

"This kind of cancer traditionally affects males who have been smoking and drinking all their life, and now in their mid-60s they are getting head and neck cancer," he said. "However, HPV cancer we are seeing in younger patients who have never smoked." Two decades ago, about 20 percent of all oral cancers were HPV-related, but today that number is more than 50 percent, according to studies published by the American Association for Cancer Research.

Similarly high rates have also been seen in Europe, where a new Swedish study has shown a strong correlation between oral cancers and oral sex. Oddly, the rising rates have not been seen yet in the Southern Hemisphere in Australia and New Zealand. Each year, more than 30,000 new cases of cancer of the oral cavity and pharynx are diagnosed, and more than 8,000 people die from oral cancer, according to the Centers for Disease Control and Prevention (CDC). Cure rates are higher than for smoking-related throat cancers, but still only 50 percent. Today, men are more likely to get oral cancer than are women, but as the epidemic grows, that could soon change.

"We expect in head and neck cancers that 85 percent are men and 15 percent are women," said Deeken. "But over the coming years that could become equal."

"It's going to take a couple of decades to see the trend turning around," he said. "The epidemiological risk factors are past sexual partners as well as marijuana exposure, not just oral sex."

Human Papilloma Virus Affecting More Men

HPV is the most common sexually-transmitted infection. Those who are infected often have no symptoms and pass it on to their partners through genital contact during vaginal and anal sex. It can also be transmitted during oral sex and, more rarely, during deep kissing through saliva.

There are more than 100 strains of the virus. Some cause genital warts, but others can result in cell changes that decades later can become cancerous. Each strain is identified by a number; oral and cervical cancers are caused by HPV sub-types 16 and 18. HPV can also cause cancers of the vulva, vagina, penis and anus, and there is some evidence it is associated with esophageal and lung cancers.

The Food and Drug Administration (FDA) approved the use of Gardasil for girls in 2006 and for boys for treatment of genital and anal warts in 2009. The vaccine can be given at any age, though it is most effective given young people before any sexual exposure. Doctors say it could prevent 10,000 more cases of oral cancer a year.

Several deaths associated with the vaccine led doctors to advise caution in the rush to promote widespread use of the vaccine, and doctors say there is a lack of public awareness of its role in preventing cancer. "With any new vaccine, you have to err on the side of caution, but every year we know more about it," said Deeken. "But we have to ask the question: What do we do for the spouses and kids of our patients? I don't see any downside to vaccination at this time. My

son and daughter will get it." Because humans are the only reservoir for HPV, "it could be eliminated like smallpox," he said. The research isn't new, but it has not received wide attention, perhaps because of taboos associated with oral sex.

Oral sex has become more commonplace; people have more sex partners and have sex earlier in life -- all behaviors linked to HPV-related oral cancers, according to a study in the Centers for Disease Control and Prevention's (CDC) Emerging Infectious Diseases report.

A study at the Swedish Karolinska Institutet showed the risk of developing oral HPV infection increased with a rise in lifetime oral or vaginal sex partners. It also cited "open mouth kissing." The study included 542 American students, and noted similar increases in such cancers in Britain, Finland and The Netherlands.

But Dr. Kevin Cullen, director of University of Maryland's Marlene and Stewart Greenebaum Cancer Center, is not sure only oral sex is to blame. "It's hard for me to believe sexual behaviors have changed that much in 15 to 20 years," he said. "It may be that as happens, epidemics get enough people infected and an infection begins to take off, and that may have happened with HPV at some point."

A study Cullen did last year found that HPV-related oral cancer in African Americans were less common than whites, perhaps because of negative cultural attitudes about oral sex. "But it looks like blacks are beginning to catch up with whites," said Cullen.

Scientists also don't know why **women tend to develop cervical cancer** while **men have more throat cancer**. "Maybe women are better able to transmit to a man than a man to the oral mucosa of a woman," said Cullen. Doctors also think that cancer is likely to develop in the first area of exposure in women, usually the vagina. The woman may then develop later immunity in the throat. But with more oral sex, often before vaginal sex, female throat cancers could increase, they say. **Very little HPV was seen until the 1980s**. "It was very rare in our archives," said Cullen. "But each year we looked, it was more prevalent. Why, no one is really sure." And doctors say those numbers have not yet peaked.

"There is increasing evidence that boys as well as girls should be vaccinated," said Cullen. "Men and women are increasingly going to face the burden of cancer, and we have a tool to prevent it." Why the medical community has not fully embraced vaccination is not clear. "The lead time for development of oral cancer is in decades, so to do definitive studies would take decades to do," he said. "[The FDA] picked the simpler task of preventing HPV warts in the short time frame."

Resistance has also come from safety concerns, as well as the fear by some groups that vaccination for a sexually transmitted disease will promote sexual behavior. Cervical cancer just may just be "sexier" than throat cancer, said Dr. Ranit Mishori, a family physician in the Georgetown University School of Medicine. "We don't think about oral cancer except in smokers," she said. "**There is no question HPV is the cause of most oral cancers**, but it's partly an awareness issue relating to our kids' sex life, and who wants to talk about oral sex?"

Convincing parents to vaccinate their sons as well as their daughters is a "hard sell," said Mishori. "Oftentimes it's the moms who take the kids to the doctor, and we tell them we have this great vaccine that can prevent their daughter from getting cervical cancer," she said. "Moms can easily relate."

But it's harder to tell her "to give her son three painful shots so that he won't transmit it to his girlfriend in the future and might not transmit cancer or have oral cancer himself," said Mishori. As for potential side effects with the vaccine, Mishori said those concerns are "pretty minor compared to the potential."

"It hasn't been around too long, but it's been tested on thousands of women," she said. "The fact that the vaccine prevents cancer is astounding in itself."

Researcher: Odette Boily
April 7, 2018

Personal Note: Instead of vaccines, why not teach our sons and daughters **'Abstinence, Purity and Chastity'.**

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Zinc: Absorption and Role in Gastrointestinal Metabolism and Disorders

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Introduction

It is known that zinc is involved in the normal function of many enzyme systems, e.g. dehydrogenases, aldolases, peptidases and phosphatases, and also protein, DNA and RNA synthesis [1–3]. Burch and Sullivan [4] have extensively reviewed the manifestations of zinc deficiency, which include growth retardation, hypogonadism, anorexia, and impaired taste, smell, wound healing and immune function [5–12]. However, the effects of zinc deficiency on the gastrointestinal (GI) tract and its role in the metabolism and disorders of the GI tract have not been reviewed. The understanding of zinc absorption from the GI tract especially represents an important area and this has been studied extensively in the past 20 years. It is also true that the effects of the interactions of zinc with other metals, nutrients and ethanol on the GI tract are vital and complex phenomena, and we need to understand them in order to obtain a full view of the pharmacological and nutritional values of zinc both in animals and in man. Zinc has also been shown to take part in the experimental carcinogenesis of some toxic substances in the esophagus [9–11] and in the metabolism of lipid and cholesterol, perhaps in the liver and gut [12–14]. These are all important areas which need to be clarified, and in the light of this article further studies should be done in the future.

Mechanisms of Zinc Absorption from the GI Tract

Zinc is absorbed [15], secreted [16] and reabsorbed [17] from the GI tract. Experimental results suggest that dietary zinc absorption is regulated by the body stores of zinc [18]. However, Evans et al. [19] demonstrated that zinc homeostasis in rats is maintained by zinc secretion from the intestine rather than by its absorption.

Site of Absorption

Zinc is absorbed by a two-step mechanism, namely, initial uptake across the luminal brush border into the cell followed by transfer across the mucosal cell to the blood. In dogs, zinc absorption is greater from the duodenum than from the jejunum or ileum, and pancreatic secretions do not appear to be necessary for adequate zinc absorption in the dog duodenum [20]. These findings are

in agreement with the results obtained by in vivo studies in rats [21, 22]. Van Campen and Mitchell [23] also reported that ^{65}Zn and ^{59}Fe were taken up most rapidly from the duodenum, somewhat more slowly from the mid-section of the jejunum and the ileum, with the least absorption occurring from the stomach. However, contrast results indicate that the absorption of this metal is largely in the distal small intestine [24]. There was no enhancement of zinc transport-specific activity in either the duodenum or ileum after extensive small bowel resection [25]. Patients undergoing jejunoileal bypass frequently develop depressed serum zinc level, although little is known about the ability of the remaining small intestine to compensate for impairment of zinc absorption [26]. Furthermore, some of the patients with ileal disorders, such as Crohn's disease, develop significant zinc deficiency state [27]. These findings indicate that the lower part of the small intestine could contribute significantly to zinc absorption in man.

Pancreatic Secretion

Higher absorption of zinc from duodenal segments was found in rats with their bile and pancreatic ducts excluded than in controls [28]. These findings are in contrast to those of Evans et al. [29], who demonstrated the presence of small peptide ligands in pancreatic secretions which increased absorption of zinc in the rat duodenum. They speculated that these small peptide ligands in pancreatic secretions may function both within the lumen and in the duodenal mucosal cells as a zinc transport. The data in dog do not support either of these studies [30]. However, they are in accordance with the data of Vanderhoof et al. [31], who found that under biliopancreatic bypass there were no significant differences in either hair or serum zinc levels when compared with those obtained from partial biliopancreatic bypass or morbidly obese controls. They concluded that pancreatic secretions did not appear to be necessary for adequate zinc absorption in humans.

Metallothionein

The relationship between intestinal metallothionein and zinc absorption has been studied. This protein is present in the intestinal mucosa and is thought to function in zinc absorption [32], storage [33] and detoxification [34]. In mice, the absorption of zinc was directly proportional to the level of intestinal metallothionein, implicating a significant role for metallothionein in zinc absorption [35]. However, in rats, a reported reduction in zinc absorption correlated with an acute increase in metallothionein synthesis [36]. This is in accordance with what is known about the inverse relation between metallothionein gene expression and zinc absorption rates in rats [36]. These contrasting results could be explained in studies using ^{65}Zn. The exchange of radioactive with nonradioactive zinc could be incorrectly interpreted as an increase in absorption and/or uptake. Uptake of zinc from the intestinal lumen is a distinct phase of the absorption process in which zinc is transported into the blood. The greater uptake of zinc from duodenal segments could reflect increased metallothionein concentration in the duodenal mucosal cells and increased intracellular zinc trapping without transport.

Prostaglandins

Prostaglandins (PGs) have been linked to zinc absorption [37, 38]. In a purified zinc-binding ligand from rat intestine, it was

demonstrated that the ligand was similar to one of the PG-like substances. It has also been reported that only PGE_2 increases the zinc content of rat internal organs whereas PGF_2 decreases it slightly. Administration of PGF_2 to indomethacin-pretreated rats decreased further and significantly lowered the zinc content in the liver and pancreas, the two organs that have a high zinc uptake. It seems that PGE_2 and PGF_2 act as physiological regulators of zinc transport by the intestinal mucosa [39]. Meydani et al. [40] found that inhibition of PG synthesis did not affect the zinc status of the rats. However, these findings were not confirmed in the study performed by Song and Adham [41], who showed that the absorption and tissue distribution of orally administered ^{65}Zn were decreased by indomethacin-treated rats. Some authors suggest that not only are PGs involved in the absorption of zinc, but other substances with low molecular weight, such as citrate [42] and picolinic acid [43] also participate.

Zinc Absorption and Its Interaction with Other Nutrients

It is known that the supply of zinc to humans or animals does not totally depend on its concentration in food. Multiple nutritional factors appear to be essential in defining its availability from various diets. Some amino acids, phytic acid and a surplus of calcium, phosphorus, iron and other metals have been shown to reduce the uptake of zinc leading to the development of a secondary deficiency of zinc [44–46]. On the other hand, histidine, cysteine and to a somewhat lesser extent threonine stimulate the absorption of zinc from food [47].

Iron

An interaction between dietary iron and zinc has been reported [48, 49], such that at dietary Fe:Zn levels above 2:1, apparent zinc absorption is reduced. This might have important consequences for pregnant women on a marginal zinc diet given iron supplements, since increased iron intake could ultimately reduce live birth weight by adverse effects on fetal zinc uptake [50]. This idea was not substantiated by Fairweather-Tait and Wright [51], who found that dietary iron did not affect the uptake or metabolism of zinc in pregnant and lactating rats with either very low (7 mg/kg) or adequate (40 mg/kg) zinc diet. Instead, pregnancy itself influences zinc metabolism as shown by the elevation in zinc retention, and this effect could counteract the antagonistic action of iron on zinc absorption.

Copper

It was noted more than 40 years ago that high levels of zinc in rat diets (1.0%) induced anemia that could be ameliorated by copper supplement [52]. Subsequent studies with radioisotopes in isolated systems have shown that a copper-zinc antagonism occurs at the absorptive level. An increase in copper retained in mucosal cells along with a decrease in copper absorption was observed in rats fed with a high-zinc diet [53, 54]. The newly bound copper is associated with metallothionein. It has been proposed that dietary zinc induces this metal-binding protein [55], which in turn acts to suppress the mucosal-to-serosal flux of copper by avidly binding copper ions. Competition and/or inhibition of copper and zinc uptake into intestinal cells occurs when the luminal concentrations of the respective congener is very high [56]. It is because of this antagonism in absorption, that

oral zinc preparations have been used therapeutically for Wilson's disease (an autosomal, recessive, inborn error of copper metabolism in which excessive amounts of copper accumulate in the body) to decrease the absorption of copper in the GI tract [57–59].

Zinc and Cholesterol Metabolism

It has been reported that zinc, via its interaction with copper nutriture, may play a role in cholesterol metabolism and in the etiology of atherosclerosis [12–14]. Klevay [12] puts forth the zinc/copper hypothesis, which describes the metabolic imbalance in regard to zinc and copper as a major etiological factor in atherosclerosis. However, there is little information regarding the role of zinc in cholesterol metabolism and little attention has been directed toward the potential adverse effects of zinc nutriture on cardiovascular diseases.

In rats, acute zinc depletion was shown to produce a significant reduction in total serum cholesterol and the decline was primarily due to the selective reduction in high-density lipoprotein-cholesterol (HDL-C). However, it did not produce any alteration in very-low density lipoprotein-cholesterol or low-density lipoprotein-cholesterol levels [60]. By the same token, an increase in serum cholesterol levels has been observed in rats fed with a high-zinc diet [12, 61]. In humans, zinc sulfate 440 mg/day given to healthy male subjects for 5 weeks did not significantly affect total serum cholesterol and triglyceride levels, but it markedly lowered the HDL-C concentration in the blood [62]. These findings were confirmed in rat studies [63]. However, in women, the reaction of HDL-C in response to pharmacological doses of zinc was transient and not dose-related [64]. From these findings, it seems that the action of zinc on HDL-C metabolism is quite specific. One explanation for the low HDL-C observed in these studies might be a slightly defective intestinal-mesenteric function, since the gut synthesizes and secretes HDL-C [65]. An intact intestinal function is thus probably important for the production of HDL-C. Indeed, there is a link between zinc and linoleic acid, as well as lipoprotein metabolism in acrodermatitis enteropathica (AE) patients [14]. Clearly, the interconversion between different lipoproteins and the metabolism of these endogenous substances are complex subjects which need to be studied further.

Vitamins

Zinc appears to be closely involved with the metabolism of H_2O-soluble vitamins. However, ascorbic acid over a range of dosages commonly consumed by man has no demonstrable effect on the absorption of inorganic zinc [66]. The early work of Eggleton [67] and Hsu [68] indicated a decrease in the zinc content of tissues in vitamin B_6 deficiency, but this was not confirmed by Gershoff [69]. Zinc forms an essential part of the bovine hepatic folate conjugase which helps to break down polyglutamyl-folates to folic acid [70]. Intestinal conjugase also could be a zinc metalloenzyme and absorption of dietary folate may be impaired in zinc deficiency. Zinc deficiency in man leading to impaired absorption of dietary folate has been reported [71]. Such deficiency may also alter tissue availability of other nutrients such as vitamin A or iron through its effect on transport protein. The three serum transport proteins, albumin, transferrin and prealbumin have been shown to be significantly decreased in zinc-deficient patients compared to healthy controls [72].

Zinc and Its Role in GI Disorders

Zinc deprivation in the rat initiates a prompt and dramatic depression of food intake [73, 74]. The effect of zinc deficiency on cell division has been reported to be most obvious in rapidly proliferating tissues. In 1983, Gebhard et al. [75] reported that the activities of disaccharidase and alkaline phosphatase in the intestinal mucosa of zinc-deficient rats were significantly decreased compared to those in weight-restricted and pair-fed control animals. In addition to the reduction of intestinal enzyme activities, protein synthesis and somatic growth are also inhibited [75, 76]. However, Zarling et al. [77] observed that zinc deficiency produced a reduction in somatic growth, but it did not disproportionately affect intestinal mucosal protein content, disaccharidase activity or intestinal architecture, although zinc deficiency has been associated with impaired carbohydrate absorption in man. Zinc deficiency also affects the intestinal transport of triglycerides in the rat [78] and also increases intestinal amino acid losses [79] in the same type of animal. These effects could contribute to growth retardation.

Ethanol and the GI Mucosa

Prolonged ingestion of high doses of ethanol (36% of total calorie) has been reported to produce significant alteration in small intestinal mucosal enzyme activity and structure as suggested by light microscopy [80]. The reported changes include decreases in sucrase, lactase and alkaline phosphatase activity and blunting of the mucosal villus height. Long-term ethanol ingestion also induces a zinc-deficient state. The action is probably due to an increase in fecal and urinary zinc loss [81].

Zinc deficiency has been shown to produce pathological changes in the stomach similar to those of ethanol. It modifies the function of the organ by increasing H^+ back-diffusion into and Na^+ leakage from the gastric mucosa [82]. It also reduces the mucus content in the glandular mucosa [82]. Because of these actions, zinc deficiency has been shown to aggravate the ulcerogenic property of ethanol on the stomach [83]. Supplementation of the metal protects against lesion formation [84, 85] by the mechanisms of strengthening the gastric mucosal barrier and preventing mucosal loss by ethanol [86]. Information regarding the antiulcer action of zinc on other experimental ulcer models both in stomachs and livers has been reviewed by Cho [87].

It is interesting to note that the metabolism of ethanol to acetaldehyde is impaired in zinc deficiency, but acetaldehyde-to-acetate conversion appears normal [88]. These findings indicate that chronic administration of ethanol could result in its diminished metabolism as a consequence of zinc deficiency in the body.

Ethanol in moderate quantities causes profound alterations of the vitamin A status of the liver and esophagus and the effects are inversely correlated with zinc nutriture. A highly significant negative correlation between serum zinc and liver vitamin A was found in ethanol-fed animals [89]. It has been suggested that chronic ethanol consumption may be associated with some mobilization of vitamin A from the liver to other organs, e.g. the esophagus [90].

Acrodermatitis Enteropathica

AE, a hereditary disease in humans, is a disorder of zinc metabolism [91, 92]. The basic defect of the disease appears to be

closely related to zinc absorption [93, 94]. Human milk and rat small intestine contain a low-molecular-weight zinc-binding ligand which increases zinc absorption. Indeed, human milk has been used in the treatment of AE and the zinc-binding protein acts by increasing the absorption of zinc in patients suffering from AE [93]. It has been postulated that a similar ligand may be present in human small intestine and that it is absent or defective in AE [94]. Casey et al. [95] reported that the amount of zinc associated with ligand in the control samples was 10 times greater than in the AE samples, i.e. less ligands were available for zinc binding in the duodenal secretion from the AE patients. Also, AE patients have faulty metabolism of arachidonic acid, a precursor of PGs, therefore the synthesis of PGs could be affected [96]. Since PGE_2 has been suggested to be involved in zinc binding and absorption, this could explain why AE patients have a low zinc level in their bodies.

Hepatic Cirrhosis

In patients with hepatic cirrhosis, there are various abnormalities in zinc metabolism. In 1957, Vallee et al. [97] found low plasma zinc and high urinary zinc levels in these patients. Others have documented low tissue levels in erythrocytes, leukocytes and liver tissues in alcoholic cirrhotic patients [98, 99]. Thus, the low tissue zinc levels in alcoholic cirrhosis are aggravated by persistent and excessive urinary zinc loss.

The mitosis rate in the cells of the GI tract, immune and hematopoietic tissues is very high. The epithelial cells in the GI mucosa are renewed every 48 h. Therefore, the effects of zinc deficiency due to the important action of zinc on protein synthesis are observed mostly in these systems. Thus, in a genetic zinc-deficient disease like AE, there is severe intestinal mucosal atrophy which can be reversed by effective oral zinc supplementation. It is therefore reasonable to propose that the existence of chronic zinc deficiency in hepatic cirrhosis might lead to pathological changes in the intestinal mucosa. The malabsorption of zinc by the gut in cirrhotic patients might also aggravate zinc deficiency. However, the findings concerning zinc absorption in patients with liver cirrhosis are contradictory. Using an oral zinc test dose, Sullivan et al. [100] observed that the rise in plasma zinc levels was lower in decompensated alcoholic cirrhosis, while Mills et al. [101] and Milman et al. [102] showed that after an oral dose of ^{65}Zn, absorption of zinc increased in compensated alcoholic cirrhosis because it compensated for existing zinc deficiency. In the study of Karayalcin et al. [103], conducted in nonalcoholic cirrhotic patients, the increase in plasma zinc was significantly lower in the cirrhotic patients than in the control group after an oral zinc tolerance test. An abnormal small intestinal mucosa with partial shortening and prominent distension of villi and intense stromal edema with inflammatory cell infiltration of the lamina propria were observed in these patients and these findings were similar o those in AE patients. It is concluded that zinc malabsorption appears to contribute to zinc deficiency in nonalcoholic cirrhotics.

Zinc compounds have been reported to prevent liver damage induced by ethanol [104], alkylating compounds [105] and cadmium [106]. It is postulated that zinc-induced protection against liver damage might result from two mechanisms of action: (1) the elevation of metallothionein level induced by zinc [107] could produce cellular

drug detoxification by binding to the protein, and (2) zinc, by virtue of its action on glutathione S-transferase activity [105], alleviates the damaging effect of free radicals and active metabolites derived from the toxic substances.

Zinc and Carcinogens

Glutathione transferases are a family of enzymes that detoxify a wide range of electrophilic agents through glutathione conjugation with subsequent mercapturic acid formation. In addition, the reactive electrophiles could be deactivated by covalent linkage to these enzymes [108]. In view of the marked electrophilicity of most chemical carcinogens [109], it appears that these enzymes have the capacity to detoxify chemical carcinogens in vivo. Indeed, the activities of these enzymes have been shown to be enhanced by several classes of compounds that protect against carcinogenic chemicals [110]. A depressed glutathione transferase activity in the presence of nutritional zinc deficiency coupled with a lowered glutathione level may lead to an increased toxicity/carcinogenicity of the carcinogen [105]. Supplementation with zinc increases the enzyme activity [111, 112] and could lessen the carcinogenic potency of some toxic substances. Also, the physiological role of zinc as an antioxidant has been suggested [113], and this could reduce the toxicity of these compounds.

Epidemiological studies in China suggest that dietary zinc deficiency and environmental exposure to N-nitrosamine carcinogens, such as N-nitrosomethylbenzylamine, are among the factors associated with an increased incidence of esophageal carcinoma in humans [114–116]. In animals, a zinc-deficient diet was found to increase esophageal tumor incidence in rat exposed to the methylbenzylnitrosamine [9–11]. Zinc-deficient diet significantly increases [^{3}H]-thymidine incorporation into esophageal epithelium DNA, and it has been suggested that the enhancement of methylbenzylnitrosamine-induced esophageal tumors by zinc deficiency is due in part to the increased proliferation of the target cells with a concomitant greater accessibility of the cellular DNA to the carcinogen [117]. Zinc deficiency has been shown to exert the opposite effect in other tumor models, e.g. a decrease in the rate of growth of transplanted fast-growing Walker 256 carcinosarcoma [118], and also in transplanted hepatomas, and a decreased rate of 3-methyl-cholanthrene-induced carcinogenesis in rats [119]. These studies concluded that decreased tumor growth in a zinc-deficient state reflected a dependence on zinc for cell division at the level of DNA replication because [^{3}H]-thymidine incorporation was significantly reduced. By contrast, zinc deficiency induces hyperplasia in the stratified squamous epithelium of the esophagus. This is characterized by increased cell turnover and an increase in the number of cell layers [120] with tumor formation [9–11]. These results point to a relationship between zinc deficiency, cell replication and incidence and growth of tumors.

Conclusion

The present review emphasizes the importance of zinc in the biological system, especially its involvement in the normal function of many enzymes and also in protein, DNA and RNA synthesis. Therefore, a clear understanding of the mechanisms of zinc absorption is very important in animals

and in man. Zinc is absorbed predominantly from the small intestine. Certain substances with low molecular weights, such as metallothionein, PGs, citrate and picolinic acid, are shown to be involved in zinc absorption. Moreover, zinc interacts with other nutrients, e.g. trace elements and vitamins, on the absorptive sites of the GI tract. All these effects represent the important issue, which needs to be appreciated in order to obtain the full view of the nutritional value of zinc.

The role of zinc in GI disorders is also reviewed. Zinc compounds could be used to treat patients with GI lesions induced by chemicals, e.g. alcohol, or patients with hereditary diseases, such as AE and Wilson's disease. However, the adverse effect of zinc on HDL-C metabolism needs further consideration if zinc is to be given on a long-term basis. Lastly, zinc compounds can act as detoxifying agents for some of the toxic chemicals via the activation of glutathione transferase activity and by their antioxidizing action. However, the role of zinc in the growth of different tumor cells is still unclear, and further study in this area is needed in the future.

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Warning: The Deadly Protein "PRIONS" and MAD COW DISEASE

Some information are taken from the book written by Vance Ferrell, titled "International Meat Crisis", copyright 2001.

As E.G. White foretold in her book Counsels on Diet and Foods, the wickedness of men has caused so much diseases in the animal kingdom that it is totally unsafe to eat any meat, eggs, milk, butter, cream, free range and all.

"Let the people be taught how to prepare food without the use of milk or butter... The time will soon come when there will be no safety in using eggs, milk, cream or butter, because disease in animals is increasing in proportion to the increase of wickedness among men. The time is near when, because of the iniquity of the fallen race, the whole animal creation will groan under the diseases that curse our earth." Counsels on Diet and Foods, p. 349 (as written in Ministry of Healing, p. 302, in 1905).

People must understand that "the Brain Nerves (24 Brain Nerves), which connect with the whole system, are the only medium through which heaven communicates with man and influences his inmost life." Education, p. 209.

This is the reason why Satan wants to destroy these 24 brain nerves of ours through food that simply is unfit for the human body.

The story of mad cow disease first began in the Fore tribe, living in the jungle near Papua, southern New Guinea: the women in this particular tribe, were found dying of a mysterious brain disease which the nationals called "Kuru" because it made its victims act very strange before they died. The people there had a tribal ritual dating from the prehistoric past, in which they would eat their relatives, when they died, in order to acquire the mental and physical stamina they had while sill alive. It was known that the women ate far more dead relatives than did the men, who primarily ate beans and sweet potatoes.

Once the symptoms showed themselves, it took about 16 months before the victim died. There was a progression of tremors and unsteady gait, followed by slurred speech, joyless laughter, and finally stupor and death. No one knew when the disease first started. Because it occurred within

families and mostly among women, researchers initially thought that Kuru was inherited genetically. But it has since been established that Kuru is infectious and was transmitted by eating the meat of those dead people (cannibalism).

This practice, continued for centuries, eventually produced a horrible new disease. Not only horrible, but unique: the disease was not caused by bacteria, viruses, parasites, fungi, or any other regular means of infection. This disease is produced by a deadly protein which the scientists have called "prions".

Proteins by themselves, were never thought to be infectious. Organisms are infectious, proteins are not. Or at least, they never used to be. The strange proteins, "prions" enter cells and apparently change normal proteins within the cells into prions just like themselves. The normal cell proteins have all the same "parts" as the prions, specifically the same amino-acid building blocks.

There is just one difference: they fold differently. What does it means? As soon as new protein is assembled by other proteins from amino acids with the cell, it folds into a certain pattern. But prions are proteins which fold into a different, incorrect pattern. That little difference renders them deadly. And it results in changes in the brain which produces holes - which looks just like holes in a sponge. Prions cannot be destroyed by cooking, radiation or any heat below 800F.

Scientists have tried to discover the cause of KURU since the 1950's. Now combining it with Kuru, they have discovered similar symptoms in cows and sheep's brain. It is an amazing research where they show that since the 1970's, cows and sheep have been made cannibals by greedy feed producers who want animals to get fat quickly by simply adding protein to their feed through the use of chicken manure, dead cats and dogs and the cows and sheep own dead bodies and manure. Remember, God created cattle and sheep to be vegans! Man has made them cannibals and these fast food hamburgers are made from these cattle raised on meat and soy beans! Cannibals Cattle hamburgers!

It is like a Hollywood movie but it is happening in reality. Because it can take years before the person suffering from CJD become visibly ill, it is believed that by the year 2015, Mad Cow disease (Bovine Spongiform

Encephalopathy - BSE) and Man - Mad Cow disease (Creutzfeldt-Jakob disease - CJD), will be worst and more spread than Aids.

CJD (human mad cow disease) deaths are occurring now in America, but they are being mislabeled as Alzheimer's. Private labs are afraid to let CJD tissue in the door to be examined after autopsy, because they would have to burn down the lab in order to be certain they had cleansed it of the prions.

Is not the Lord telling us something? A scientist by the name of Richard Lacey has published a book titled Mad Cow Disease: The History of BSE in Britain, Cypsela Publications, 1994, which describes these facts.

Is it not interesting that the word "prions" which is the name of these deadly cannibal proteins, in French means: "let's pray".

From Mad Cows to Humans - THE NEXT GLOBAL PLAGUE?
(See File 11, p. 86-97)

Tragedy and Hype - The Third International Soy Symposium
(See File 11, p. 98-121)

From Mad Cows to Humans
THE NEXT GLOBAL PLAGUE?

By underestimating the threat and not taking action sooner over the BSE and CJD crises, agricultural and health authorities in Britain and Europe may have unleashed a potentially global and fatal epidemic.

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ACROSS THE SPECIES BARRIER - AND NO CURES IN SIGHT

Speaking from Washington, DC, in October 1997 after hearing of his Nobel Prize win for discovering the role of molecules known as "prions" in the invariably fatal brain illnesses such as "mad cow disease" or bovine spongiform encephalopathy (BSE) in cattle, and Creutzfeldt-Jakob disease (CJD) in humans, Dr Stanley Prusiner from the University of California predicted that the first drug therapy, which would not necessarily be a cure for BSE or CJD, was at least five years away.1

At the same time, on the opposite side of the Atlantic, the post-mortem of Chris Warne, a 36-year-old fitness fanatic from Derbyshire, England, revealed that he was the 21st victim of the new variant of CJD which had spread from BSE-infected cattle to humans via the food chain.

Only 18 months earlier, a British House of Commons admission that BSE-infected meat had probably caused the CJD deaths of 10 youthful Britons left the British meat industry in tatters.2 Since then, the history of BSE has gradually unfolded to reveal a brain-dead imperialism, one which, while blinded by its own arrogant greed to inflate market profits, has treated public and, indeed, world health with gay abandon.

Formerly a rare disease which affected less than one per million in most countries, one worst-case scenario predicts that BSE-infected meat will push the incidence of CJD in humans to claim 10,000 British lives by the year 2000, and a further 10 million by the year 2010. Another predicts that half the British people, some 30 million, will be left brain-dead by CJD. As Chris Warne's mother commented, her son was a health-conscious sportsman, but "after winning medals in March, by July he couldn't stand on his feet, and by October he was gone".

A CJD epidemic of these proportions largely defies contemplation, but at the same time it raises important questions of whether nature or human error was responsible for the unprecedented assault of CJD and BSE on humans and animals, and whether the public health implications will, at best, be restricted to Britain and her European cronies, or, at worst, become a global disaster.

Faced with a worldwide boycott of British beef, millions of cattle destined for cremation, and BSE emerging in cattle all across Europe, authorities have disenchantingly persisted with face-saving reassurances, the majority of which are disproven with monotonous regularity.

In keeping with the 1960s to 1985 medical mayhem which turned infertile women and short-statured children into human incubators of CJD with injections of hormones harvested from the pituitary glands of human cadavers, mad-cow globalists view Third World countries as a dumping-ground for BSE-infected meat in their thrust to salvage some cash from the chaos.

Unlike the malignant twists of nature, ranging from bubonic plague through to potato blight, which have killed masses throughout the ages, both the beef and pituitary hormone CJD crises were manmade. Scrapie, the sheep equivalent of BSE and CJD, has been around for more than two centuries. Somewhat differently, human spongiform encephalopathy was unheard of

before two German physicians, Creutzfeldt and Jakob, independently reported the initial cases in the 1920s. BSE, too, was unheard of until a decade after cattle began to be fed the protein-rich remains of scrapie-infected sheep to accelerate their growth.

Until the BSE crisis came to a head in 1996, there was no concerted effort to find a diagnostic screening test to identify CJD/BSE infection, and to this day there is no known medication which can cure or allay the cruelty of human or animal death from the diseases.

In humans, outward warning symptoms only emerge after a prolonged incubation period that, in iatrogenic cases which have occurred as a result of human pituitary growth and infertility hormone injections or contaminated surgical materials, has ranged from as few as two to as many as 40 years. By that stage, the agent of CJD has already turned the brain into the sponge-like mass that led this group of diseases to be classified as "spongiform slow-virus disorders" in the first instance. Death may be a welcome escape from the involuntary jerking motions which accompany CJD which, while silently eating away at the brain over years, has robbed humans of their every means of communication-the ability to hear, see and speak. Gone, too, is the understanding of written and spoken native language, and with it every scrap of dignity.

Similarly, BSE has no respect for cattle decorum, and a furnace is the fate of confused and trembling animals that the disease has deprived of their own legs on which to stand.

TRACING THE TRANSMISSION ROUTES OF BRAIN DISEASES

The original lesson about the infectious nature of these brain diseases came from a 1934 vaccine catastrophe in the UK which brought scrapie, or "mad sheep disease", to almost 5,000 out of 18,000 lambs within two years of their immunisation against louping-ill virus infection. Tracing back, scientists discovered that the vaccine serum was prepared from a number of lambs whose dams had subsequently developed scrapie, but the significance of scrapie passing vertically from ewes to their lambs, and horizontally from lamb to lamb by virtue of the vaccine injections, was kept from international eyes by a series of egotistical carry-ons which prevented the data from reaching the pages of the scientific literature for a further 15 years.[3]

By then, as the 1950s dawned, mad sheep disease was shown in the United States to jump the species barrier when a scrapie-infected food supplement brought a similar brain illness to farm-raised mink in 1947.4

By this stage, the medico-scientific fraternity was intensely preoccupied with another incurable brain illness, kuru, which had reached epidemic proportions amongst the Fore people living in the highlands of New Guinea. Anthropologists from the University of Adelaide unravelled a chain of events to trace the origin of kuru back to the reverent consumption of deceased tribal members' bodies. Kuru was essentially eradicated by New Guinean authorities acting in 1959 on the anthropological clue to outlaw the eating of human flesh. However, the 1976 Nobel Prize went to American scientist Carleton Gajdusek for his experiments demonstrating that injections of kuru brain (1967) and CJD brain (1969) reproduced similar illnesses in chimpanzees.5 Gajdusek was placed behind bars in 1997 after being found guilty of molesting one the numerous New Guinean youths he has sponsored into the United States over the previous 30 years; however, his research did put an end to ideas that species barriers were an impediment to the spread of this type of disease.

Two neuroscientists, Laura and (the late) Eli Manuelides, from Yale University in the US, went on to illustrate by 1975 that injections of human blood, like injections of brain taken from kuru and CJD victims, transmitted the disease across the species barrier to laboratory animals.6 Their prophetic, but unheeded, message implied that blood was the vehicle that carried the agent of CJD around the body until it chanced upon an hospitable residence like the brain. This meant that the blood route was the key to the transmission of CJD from a primary host to a secondary host. As distinct from infections such as influenza (which is caused by an airborne virus), but in parallel with AIDS and hepatitis B (which are caused by bloodborne viruses), this indicated that recipients exposed to human pituitary gland hormone injections, or to blood or organ transplants from a donor with CJD, risked becoming secondary CJD hosts once contagious material entered their bloodstreams. Similarly, as the UK Government admitted on 7 October 1997,1 humans infected with the new variant of CJD coming from BSE-infected meat may spread their CJD via blood donation, thereby hastening the globalisation of the European mad-cow dilemma.

Even as the understanding of spongiform encephalopathy increased, various human pituitary hormone programs in countries such as Australia,

France, New Zealand, the United Kingdom and United States were attracting hefty government sponsorships. Few of the programs' stalwarts caught on to the implications of the Manuelides' experiments, and unsuccessful attempts between the years of 1978 and 19827 to filter the CJD agent out of the pituitary hormones being injected into unsuspecting short-statured children and infertile women were left to one of this era's rare visionaries, British scrapie expert Alan Dickinson.

At about the same time, a British Royal Commission on Environmental Pollution in 1979 raised the possibility that the unregulated cycling of protein-rich sheep remains back into animal feed might spread scrapie to cattle, as it had done to farm mink in the US three decades beforehand, via the oral route.

At the same time, too, in the push to meet the insatiable demand for more and more human pituitary hormones, India, the world's second-most-populous country, became a Mecca for pituitary- gland harvests. Literally millions of pituitaries were harvested from cadavers in the subcontinent and sent to government laboratories back in Europe and North America. The promised repayment in kind-namely, with a supply of extracted growth hormone to treat short-statured children in India-simply became another broken imperialist promise, but one which probably accounts for India's enviable position today of remaining a CJD-free country.8

By 1985, the first of the fatal legacies of this form of medical madness emerged with four cases of CJD in human pituitary growth hormone-treated children.

Programs were immediately halted in most countries, the notable exception being France where the growth-hormone treatment of children continued-based on the haughty assumption that the purity of the French hormone-extraction process accounted for the absence of a single case of CJD to that point in time. Four years later, in 1989, during which time the number of French children at risk of growth-hormone-related CJD had practically doubled, the first French children fulfilled that tragic legacy. In 1993, those responsible for this travesty were threatened with manslaughter charges. By 1997, France had half of the world's 100-plus cases of pituitary hormone-related CJD.9

Although the general elitism of human-pituitary programs restricted this brand of medical madness to North America, Europe and Australasia, Third World children and women did not altogether escape the insanity of applying Frankenstein medicine to social conditions. A medical report in 199110 linked the CJD death of a young Brazilian man, like those of five youthful New Zealand men and women,11 with a childhood treatment involving pituitary growth hormone obtained from the US.

Unfortunately, the fate of women in Mexico City whose breasts were injected with US pituitary hormones in an appalling experiment12 to increase the volume of milk in lactating mothers (some already pregnant again) will probably never be known.

The opportunity to contain the CJD legacy of pituitary-hormone injections went begging, as blissfully unaware recipients risked spreading their legacy via blood donation. Similarly, the possibility that pituitary-hormone recipients may have transmitted their CJD legacy to their children was totally cast aside.

Oddly, although the entire concept of blood-transfusion-related CJD was publicly dismissed by health authorities, by 1987 all US and New Zealand registered recipients of pituitary growth hormone were advised not to donate blood and organs. It took until 1992 for Australian and British blood banks and transplant programs to follow suit, with the result that the Australian and British general communities were exposed to the risk of secondary CJD transmission for five years longer than their American and New Zealand counterparts.

Somewhat inexplicably, too, despite the theory of blood-transmitted CJD being considered unproven in humans, 1995 and 1996 actions indicate that authorities have finally opened their minds to the public health implications of the Manuelides' experiments. Canadian authorities spent C$15 million in 1995 to withdraw pooled plasma, already in the process of being transfused to thousands across the country, on the grounds that it contained a donation from a man who had subsequently died of CJD.13 Similarly, in 1996, New Zealand authorities bit the bullet under the weight of public pressure and quarantined blood products which had been contaminated by a donation from a CJD-infected donor;14 and British blood banks increased their precautionary measures with an extended

questioning routine designed to screen out donations from parents, siblings and children of CJD victims.15

British microbiologist Steven Dealler estimates that CJD-infected blood may reach as many as 60,000 recipients each year,16 but the years-long incubation time preceding CJD symptoms increases the difficulty of linking a blood transfusion recipient's CJD with a donor source. It falls within the realms of possibility that secondary CJD in a transfusion recipient may appear years in advance of the primary CJD in a blood donor, and evidence of blood-transfusion-transmitted CJD was dismissed as anecdotal until 1996, when the case of CJD in a liver transplant recipient was, after the liver donor had been cleared, traced back to a CJD-like illness in one of the blood donors.17

MARKETPLACE MADNESS

One year after the first cases of pituitary growth hormone-related CJD in 1985, the first of the animal-protein-fed cattle came down with BSE.18

Advisory committees were set up around the world, but none with the foresight to include public health experts trained to weigh policy in terms of both best and worst predictions. Instead, for the next 10 years authorities seized every chance to preserve the reputations and careers of eminent politicians, physicians and scientists, and managed to allay public anxiety by keeping news of their bungles out of the media. Public and animal health ran a very poor second to the market pressures19 which saw cattle transformed from BSE-free herbivores into BSE-infected carnivores by a nonregulated protein diet. In fact, even as BSE emerged in protein-fed British cattle in 1986, scientific advice that the epidemic could best be contained by compensating farmers for the immediate destruction of the 10,000-odd infected cattle was dismissed because of budgetary concerns.

Following the 1988 ban on scrapie-contaminated animal feed, the BSE epidemic was claimed to be under control. According to authorities, the peak 1992 weekly average of 700 new cases of BSE dropped to 70 cases per week in 1996. At the same time, the notion of control is contradicted by the BSE in some 27,000 cattle born after the 1988 ban. Rather, these figures, together with the 60 per cent of 1996 cases occurring in cattle born post-1988, indicate that pre-feed-regulated cattle have passed BSE onto their calves.

Like the theory of bloodborne CJD in humans, earlier suggestions20 that the BSE epidemic in cattle was maintained by maternal transmission were dismissed and at times ridiculed, until a 1996 study proved otherwise.21 Erring on the side of caution has invariably been forgotten in the brain-dead politicking underpinning the BSE/CJD debacle. As an example, the British Ministry of Agriculture, Fisheries and Food (MAFF) sabotaged a 1990 Brussels ruling designed to prevent the spread of BSE across to the European mainland.22

MAFF instead issued civil servants with secret orders to skip the computer-vetting of calves set for the lucrative saleyards of European Union (EU) member countries. As a result, there were no checks to determine whether some two million veal calves sold to the EU between 1990 and 1995 were born to BSE-infected cows or not.

Even the computer tracing of the BSE parentage of some 2,000 cattle sold for foreign breeding after 1990 is untrustworthy, partly because of MAFF's skulduggery, and partly because the sales involved animals that were too young to reveal symptoms of BSE infection-and there is no diagnostic screening test for BSE to establish which cattle are infected and which are free of BSE.

An estimated 700,000 BSE-infected cattle entered the human food chain, chiefly because the animal's slaughter age (usually three years) pre-dated the average age (five years) at which they would show signs of BSE infection.23 For the same reason, there is simply no way of knowing the number of breeding stock exported to the four corners of the globe before their sire's or dam's BSE was subsequently uncovered.

Britain was not alone in the cover-up of the BSE scandal. In September 1996, the French newspaper Libération24 revealed that a memorandum from French official Gilbert Castille had suggested back in 1990 that Britain ought to be asked not to publish its research results, saying, "it would be better to minimise BSE by practising disinformation". In fact, rather than ganging up on Britain, Brussels, via Guy Legras, head of the European Commission's agricultural directorate, warned of the financial repercussions from a beef panic and so hushed up news of the BSE situation.

PAYING THE PRICE OF GLOBALISATION

Cattle may not be the only species within the meat industry that is harbouring the BSE/CJD agent in readiness for the food chain. Until March 1996, no restrictions were placed on feeding cattle offal to pigs and hens.25

Together with a common practice whereby animal-feed manufacturers share the same equipment to mix both cattle-feed and pig-feed, this approach reflects a glaring ignorance within the agricultural industry about the dangerously infectious nature of diseases such as BSE and CJD.

This background, together with the extreme resistance of BSE and CJD to high temperatures and caustic chemicals that customarily rid instruments and tools of infectious materials, may explain the disproportional excess of CJD infection occurring in the farming community. It also brings the focus back to blood-route-transmitted CJD, and raises the prospect of simple kitchen injuries introducing BSE from infected meat products into the bloodstream of an unsuspecting public.26

A worst-case-scenario-sized CJD epidemic will smash rather than stretch every available human resource. European transnationalists, joined in this century by those from the United States, and to a lesser extent Canada and Australia, have widened the gap between developed and developing regions with modern discriminations which transgress the boundaries of human rights, development, environment, nuclear weapons, population, trade and wealth.27, 28, 29, 30

Just as medical impropriety, rather than nature, has already destroyed the lives of 100-plus pituitary hormone recipients and their families, agricultural impropriety in the beef and dairy industry, rather than nature, has snuffed out young lives with an atypical but equally cruel form of CJD spread from cattle.

Humans and animals have paid a huge price for the 60-year reign of institutionalised shortsightedness and its underestimated and mistaken grasp of the CJD/BSE contagion. Notions that whitewash the cull of Britain's cattle population to make early inroads into global greenhouse targets31-notions like the current sell-off of British meat at record low prices in Asia, and proposals to restock the sacred herds of India and detonate Cambodia's and Afghanistan's landmines with BSE-infected cattle-are

barbarous extensions of a brain-dead culture which serve only to hasten the globalisation of the CJD/BSE epidemic.

With mad-cow maniacs intent on adding manmade BSE to the nuclear waste, toxic chemicals and perilous medications which have already turned Third World countries into dumping grounds for developed-world disasters, surely this is proof that little or nothing has been learned from 60 years of "progress" in economics, science and politics.

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Tragedy and Hype
The Third International Soy Symposium

Far from being the perfect food, modern soy products contain antinutrients and toxins and they interfer with the absorption of vitamins and minerals.

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Each year, research on the health effects of soy and soybean components seems to increase exponentially. Furthermore, research is not just expanding in the primary areas under investigation, such as cancer, heart disease and osteoporosis; new findings suggest that soy has potential benefits that may be more extensive than previously thought.

So writes Mark Messina, PhD, General Chairperson of the Third International Soy Symposium, held in Washington, DC, in November 1999.1 For four days, well-funded scientists gathered in Washington made presentations to an admiring press and to their sponsors - United Soybean Board, American Soybean Association, Monsanto, Protein Technologies International, Central Soya, Cargill Foods, Personal Products Company, SoyLife, Whitehall-Robins Healthcare and the soybean councils of Illinois, Indiana, Kentucky, Michigan, Minnesota, Nebraska, Ohio and South Dakota.

The symposium marked the apogee of a decade-long marketing campaign to gain consumer acceptance of tofu, soy milk, soy ice cream, soy cheese, soy sausage and soy derivatives, particularly soy isoflavones like genistein and diadzen, the oestrogen-like compounds found in soybeans. It coincided with a US Food and Drug Administration (FDA) decision, announced on

October 25, 1999, to allow a health claim for products "low in saturated fat and cholesterol" that contain 6.25 grams of soy protein per serving. Breakfast cereals, baked goods, convenience food, smoothie mixes and meat substitutes could now be sold with labels touting benefits to cardiovascular health, as long as these products contained one heaping teaspoon of soy protein per 100-gram serving.

MARKETING THE PERFECT FOOD

"Just imagine you could grow the perfect food. This food not only would provide affordable nutrition, but also would be delicious and easy to prepare in a variety of ways. It would be a healthful food, with no saturated fat. In fact, you would be growing a virtual fountain of youth on your back forty." The author is Dean Houghton, writing for *The Furrow*,2 a magazine published in 12 languages by John Deere. "This ideal food would help prevent, and perhaps reverse, some of the world's most dreaded diseases. You could grow this miracle crop in a variety of soils and climates. Its cultivation would build up, not deplete, the land...this miracle food already exists... It's called soy."

Just imagine. Farmers have been imagining - and planting more soy. What was once a minor crop, listed in the 1913 US Department of Agriculture (USDA) handbook not as a food but as an industrial product, now covers 72 million acres of American farmland. Much of this harvest will be used to feed chickens, turkeys, pigs, cows and salmon. Another large fraction will be squeezed to produce oil for margarine, shortenings and salad dressings. Advances in technology make it possible to produce isolated soy protein from what was once considered a waste product - the defatted, high-protein soy chips - and then transform something that looks and smells terrible into products that can be consumed by human beings. Flavourings, preservatives, sweeteners, emulsifiers and synthetic nutrients have turned soy protein isolate, the food processors' ugly duckling, into a New Age Cinderella.

The new fairy-tale food has been marketed not so much for her beauty but for her virtues. Early on, products based on soy protein isolate were sold as extenders and meat substitutes - a strategy that failed to produce the requisite consumer demand. The industry changed its approach. "The quickest way to gain product acceptability in the less affluent society," said an industry spokesman, "is to have the product consumed on its own merit in a more affluent society."3 So soy is now sold to the upscale consumer,

not as a cheap, poverty food but as a miracle substance that will prevent heart disease and cancer, whisk away hot flushes, build strong bones and keep us forever young. The competition - meat, milk, cheese, butter and eggs - has been duly demonised by the appropriate government bodies. Soy serves as meat and milk for a new generation of virtuous vegetarians.
Marketing costs money, especially when it needs to be bolstered with "research", but there's plenty of funds available. All soybean producers pay a mandatory assessment of one-half to one per cent of the net market price of soybeans. The total - something like US$80 million annually4 - supports United Soybean's program to "strengthen the position of soybeans in the marketplace and maintain and expand domestic and foreign markets for uses for soybeans and soybean products". State soybean councils from Maryland, Nebraska, Delaware, Arkansas, Virginia, North Dakota and Michigan provide another $2.5 million for "research".5 Private companies like Archer Daniels Midland also contribute their share. ADM spent $4.7 million for advertising on *Meet the Press* and $4.3 million on *Face the Nation* during the course of a year.6 Public relations firms help convert research projects into newspaper articles and advertising copy, and law firms lobby for favourable government regulations. IMF money funds soy processing plants in foreign countries, and free trade policies keep soybean abundance flowing to overseas destinations.

The push for more soy has been relentless and global in its reach. Soy protein is now found in most supermarket breads. It is being used to transform "the humble tortilla, Mexico's corn-based staple food, into a protein-fortified 'super-tortilla' that would give a nutritional boost to the nearly 20 million Mexicans who live in extreme poverty".7 Advertising for a new soy-enriched loaf from Allied Bakeries in Britain targets menopausal women seeking relief from hot flushes. Sales are running at a quarter of a million loaves per week.8

The soy industry hired Norman Robert Associates, a public relations firm, to "get more soy products onto school menus".9 The USDA responded with a proposal to scrap the 30 per cent limit for soy in school lunches. The NuMenu program would allow unlimited use of soy in student meals. With soy added to hamburgers, tacos and lasagna, dieticians can get the total fat content below 30 per cent of calories, thereby conforming to government dictates. "With the soy-enhanced food items, students are receiving better servings of nutrients and less cholesterol and fat."

Soy milk has posted the biggest gains, soaring from $2 million in 1980 to $300 million in the US last year.10 Recent advances in processing have transformed the grey, thin, bitter, beany-tasting Asian beverage into a product that Western consumers will accept - one that tastes like a milkshake, but without the guilt.

Processing miracles, good packaging, massive advertising and a marketing strategy that stresses the products' possible health benefits account for increasing sales to all age groups. For example, reports that soy helps prevent prostate cancer have made soy milk acceptable to middle-aged men. "You don't have to twist the arm of a 55- to 60-year-old guy to get him to try soy milk," says Mark Messina. Michael Milken, former junk bond financier, has helped the industry shed its hippie image with well-publicised efforts to consume 40 grams of soy protein daily.

America today, tomorrow the world. Soy milk sales are rising in Canada, even though soy milk there costs twice as much as cow's milk. Soybean milk processing plants are sprouting up in places like Kenya.11 Even China, where soy really is a poverty food and whose people want more meat, not tofu, has opted to build Western-style soy factories rather than develop western grasslands for grazing animals.12

CINDERELLA'S DARK SIDE

The propaganda that has created the soy sales miracle is all the more remarkable because, only a few decades ago, the soybean was considered unfit to eat - even in Asia. During the Chou Dynasty (1134&endash;246 BC) the soybean was designated one of the five sacred grains, along with barley, wheat, millet and rice. However, the pictograph for the soybean, which dates from earlier times, indicates that it was not first used as a food; for whereas the pictographs for the other four grains show the seed and stem structure of the plant, the pictograph for the soybean emphasises the root structure. Agricultural literature of the period speaks frequently of the soybean and its use in crop rotation. Apparently the soy plant was initially used as a method of fixing nitrogen.13

The soybean did not serve as a food until the discovery of fermentation techniques, some time during the Chou Dynasty. The first soy foods were fermented products like tempeh, natto, miso and soy sauce. At a later date, possibly in the 2nd century BC, Chinese scientists discovered that a purée of cooked soybeans could be precipitated with calcium sulphate or

magnesium sulphate (plaster of Paris or Epsom salts) to make a smooth, pale curd - tofu or bean curd. The use of fermented and precipitated soy products soon spread to other parts of the Orient, notably Japan and Indonesia.

The Chinese did not eat unfermented soybeans as they did other legumes such as lentils because the soybean contains large quantities of natural toxins or "antinutrients". First among them are potent enzyme inhibitors that block the action of trypsin and other enzymes needed for protein digestion. These inhibitors are large, tightly folded proteins that are not completely deactivated during ordinary cooking. They can produce serious gastric distress, reduced protein digestion and chronic deficiencies in amino acid uptake. In test animals, diets high in trypsin inhibitors cause enlargement and pathological conditions of the pancreas, including cancer.14

Soybeans also contain haemagglutinin, a clot-promoting substance that causes red blood cells to clump together.

Trypsin inhibitors and haemagglutinin are growth inhibitors. Weanling rats fed soy containing these antinutrients fail to grow normally. Growth-depressant compounds are deactivated during the process of fermentation, so once the Chinese discovered how to ferment the soybean, they began to incorporate soy foods into their diets. In precipitated products, enzyme inhibitors concentrate in the soaking liquid rather than in the curd. Thus, in tofu and bean curd, growth depressants are reduced in quantity but not completely eliminated.

Soy also contains goitrogens - substances that depress thyroid function.
Soybeans are high in phytic acid, present in the bran or hulls of all seeds. It's a substance that can block the uptake of essential minerals - calcium, magnesium, copper, iron and especially zinc - in the intestinal tract. Although not a household word, phytic acid has been extensively studied; there are literally hundreds of articles on the effects of phytic acid in the current scientific literature. Scientists are in general agreement that grain- and legume-based diets high in phytates contribute to widespread mineral deficiencies in third world countries.15 Analysis shows that calcium, magnesium, iron and zinc are present in the plant foods eaten in these areas, but the high phytate content of soy- and grain-based diets prevents their absorption.

The soybean has one of the highest phytate levels of any grain or legume that has been studied,16 and the phytates in soy are highly resistant to normal phytate-reducing techniques such as long, slow cooking.17 Only a long period of fermentation will significantly reduce the phytate content of soybeans. When precipitated soy products like tofu are consumed with meat, the mineral-blocking effects of the phytates are reduced.18 The Japanese traditionally eat a small amount of tofu or miso as part of a mineral-rich fish broth, followed by a serving of meat or fish.

Vegetarians who consume tofu and bean curd as a substitute for meat and dairy products risk severe mineral deficiencies. The results of calcium, magnesium and iron deficiency are well known; those of zinc are less so.
Zinc is called the intelligence mineral because it is needed for optimal development and functioning of the brain and nervous system. It plays a role in protein synthesis and collagen formation; it is involved in the blood-sugar control mechanism and thus protects against diabetes; it is needed for a healthy reproductive system. Zinc is a key component in numerous vital enzymes and plays a role in the immune system. Phytates found in soy products interfere with zinc absorption more completely than with other minerals.19 Zinc deficiency can cause a "spacey" feeling that some vegetarians may mistake for the "high" of spiritual enlightenment.

Milk drinking is given as the reason why second-generation Japanese in America grow taller than their native ancestors. Some investigators postulate that the reduced phytate content of the American diet - whatever may be its other deficiencies - is the true explanation, pointing out that both Asian and Western children who do not get enough meat and fish products to counteract the effects of a high phytate diet, frequently suffer rickets, stunting and other growth problems.20

SOY PROTEIN ISOLATE: NOT SO FRIENDLY

Soy processors have worked hard to get these antinutrients out of the finished product, particularly soy protein isolate (SPI) which is the key ingredient in most soy foods that imitate meat and dairy products, including baby formulas and some brands of soy milk.

SPI is not something you can make in your own kitchen. Production takes place in industrial factories where a slurry of soy beans is first mixed with an alkaline solution to remove fibre, then precipitated and separated using an acid wash and, finally, neutralised in an alkaline solution. Acid washing

in aluminium tanks leaches high levels of aluminium into the final product. The resultant curds are spray- dried at high temperatures to produce a high-protein powder. A final indignity to the original soybean is high-temperature, high-pressure extrusion processing of soy protein isolate to produce textured vegetable protein (TVP).

Much of the trypsin inhibitor content can be removed through high-temperature processing, but not all. Trypsin inhibitor content of soy protein isolate can vary as much as fivefold.21 (In rats, even low-level trypsin inhibitor SPI feeding results in reduced weight gain compared to controls.22) But high-temperature processing has the unfortunate side-effect of so denaturing the other proteins in soy that they are rendered largely ineffective.23 That's why animals on soy feed need lysine supplements for normal growth.

Nitrites, which are potent carcinogens, are formed during spray-drying, and a toxin called lysinoalanine is formed during alkaline processing.24 Numerous artificial flavourings, particularly MSG, are added to soy protein isolate and textured vegetable protein products to mask their strong "beany" taste and to impart the flavour of meat.25

In feeding experiments, the use of SPI increased requirements for vitamins E, K, D and B12 and created deficiency symptoms of calcium, magnesium, manganese, molybdenum, copper, iron and zinc.26 Phytic acid remaining in these soy products greatly inhibits zinc and iron absorption; test animals fed SPI develop enlarged organs, particularly the pancreas and thyroid gland, and increased deposition of fatty acids in the liver.27

Yet soy protein isolate and textured vegetable protein are used extensively in school lunch programs, commercial baked goods, diet beverages and fast food products. They are heavily promoted in third world countries and form the basis of many food giveaway programs.

In spite of poor results in animal feeding trials, the soy industry has sponsored a number of studies designed to show that soy protein products can be used in human diets as a replacement for traditional foods. An example is "Nutritional Quality of Soy Bean Protein Isolates: Studies in Children of Preschool Age", sponsored by the Ralston Purina Company.28 A group of Central American children suffering from malnutrition was first stabilised and brought into better health by feeding them native foods,

including meat and dairy products. Then, for a two-week period, these traditional foods were replaced by a drink made of soy protein isolate and sugar. All nitrogen taken in and all nitrogen excreted was measured in truly Orwellian fashion: the children were weighed naked every morning, and all excrement and vomit gathered up for analysis. The researchers found that the children retained nitrogen and that their growth was "adequate", so the experiment was declared a success.

Whether the children were actually healthy on such a diet, or could remain so over a long period, is another matter. The researchers noted that the children vomited "occasionally", usually after finishing a meal; that over half suffered from periods of moderate diarrhoea; that some had upper respiratory infections; and that others suffered from rash and fever.

It should be noted that the researchers did not dare to use soy products to help the children recover from malnutrition, and were obliged to supplement the soy-sugar mixture with nutrients largely absent in soy products - notably, vitamins A, D and B12, iron, iodine and zinc.

FDA HEALTH CLAIM CHALLENGED

The best marketing strategy for a product that is inherently unhealthy is, of course, a health claim.

"The road to FDA approval," writes a soy apologist, "was long and demanding, consisting of a detailed review of human clinical data collected from more than 40 scientific studies conducted over the last 20 years. Soy protein was found to be one of the rare foods that had sufficient scientific evidence not only to qualify for an FDA health claim proposal but to ultimately pass the rigorous approval process."29

The "long and demanding" road to FDA approval actually took a few unexpected turns. The original petition, submitted by Protein Technology International, requested a health claim for isoflavones, the oestrogen-like compounds found plentifully in soybeans, based on assertions that "only soy protein that has been processed in a manner in which isoflavones are retained will result in cholesterol lowering". In 1998, the FDA made the unprecedented move of rewriting PTI's petition, removing any reference to the phyto-oestrogens and substituting a claim for soy protein - a move that was in direct contradiction to the agency's regulations. The FDA is authorised to make rulings only on substances presented by petition.

The abrupt change in direction was no doubt due to the fact that a number of researchers, including scientists employed by the US Government, submitted documents indicating that isoflavones are toxic.

The FDA had also received, early in 1998, the final British Government report on phytoestrogens, which failed to find much evidence of benefit and warned against potential adverse effects.30

Even with the change to soy protein isolate, FDA bureaucrats engaged in the "rigorous approval process" were forced to deal nimbly with concerns about mineral blocking effects, enzyme inhibitors, goitrogenicity, endocrine disruption, reproductive problems and increased allergic reactions from consumption of soy products.31

One of the strongest letters of protest came from Dr Dan Sheehan and Dr Daniel Doerge, government researchers at the National Center for Toxicological Research.32 Their pleas for warning labels were dismissed as unwarranted.

"Sufficient scientific evidence" of soy's cholesterol-lowering properties is drawn largely from a 1995 meta-analysis by Dr James Anderson, sponsored by Protein Technologies International and published in the *New England Journal of Medicine*.33

A meta-analysis is a review and summary of the results of many clinical studies on the same subject. Use of meta-analyses to draw general conclusions has come under sharp criticism by members of the scientific community. "Researchers substituting meta-analysis for more rigorous trials risk making faulty assumptions and indulging in creative accounting," says Sir John Scott, President of the Royal Society of New Zealand. "Like is not being lumped with like. Little lumps and big lumps of data are being gathered together by various groups."34

There is the added temptation for researchers, particularly researchers funded by a company like Protein Technologies International, to leave out studies that would prevent the desired conclusions. Dr Anderson discarded eight studies for various reasons, leaving a remainder of twenty-nine. The published report suggested that individuals with cholesterol levels over 250 mg/dl would experience a "significant" reduction of 7 to 20 per cent in levels of serum cholesterol if they substituted soy protein for animal protein.

Cholesterol reduction was insignificant for individuals whose cholesterol was lower than 250 mg/dl.

In other words, for most of us, giving up steak and eating vegieburgers instead will not bring down blood cholesterol levels. The health claim that the FDA approved "after detailed review of human clinical data" fails to inform the consumer about these important details.

Research that ties soy to positive effects on cholesterol levels is "incredibly immature", said Ronald M. Krauss, MD, head of the Molecular Medical Research Program and Lawrence Berkeley National Laboratory.35 He might have added that studies in which cholesterol levels were lowered through either diet or drugs have consistently resulted in a greater number of deaths in the treatment groups than in controls - deaths from stroke, cancer, intestinal disorders, accident and suicide.36 Cholesterol-lowering measures in the US have fuelled a $60 billion per year cholesterol-lowering industry, but have not saved us from the ravages of heart disease.

SOY AND CANCER

The new FDA ruling does not allow any claims about cancer prevention on food packages, but that has not restrained the industry and its marketeers from making them in their promotional literature.

"In addition to protecting the heart," says a vitamin company brochure, "soy has demonstrated powerful anticancer benefits...the Japanese, who eat 30 times as much soy as North Americans, have a lower incidence of cancers of the breast, uterus and prostate."37

Indeed they do. But the Japanese, and Asians in general, have much higher rates of other types of cancer, particularly cancer of the oesophagus, stomach, pancreas and liver.38 Asians throughout the world also have high rates of thyroid cancer.39 The logic that links low rates of reproductive cancers to soy consumption requires attribution of high rates of thyroid and digestive cancers to the same foods, particularly as soy causes these types of cancers in laboratory rats.

Just how much soy do Asians eat? A 1998 survey found that the average daily amount of soy protein consumed in Japan was about eight grams for men and seven for women - less than two teaspoons.40 The famous Cornell China Study, conducted by Colin T. Campbell, found that legume

consumption in China varied from 0 to 58 grams per day, with a mean of about twelve.41 Assuming that two-thirds of legume consumption is soy, then the maximum consumption is about 40 grams, or less than three tablespoons per day, with an average consumption of about nine grams, or less than two teaspoons. A survey conducted in the 1930s found that soy foods accounted for only 1.5 per cent of calories in the Chinese diet, compared with 65 per cent of calories from pork.42 (Asians traditionally cooked with lard, not vegetable oil!)

Traditionally fermented soy products make a delicious, natural seasoning that may supply important nutritional factors in the Asian diet. But except in times of famine, Asians consume soy products only in small amounts, as condiments, and not as a replacement for animal foods - with one exception. Celibate monks living in monasteries and leading a vegetarian lifestyle find soy foods quite helpful because they dampen libido.

It was a 1994 meta-analysis by Mark Messina, published in *Nutrition and Cancer*, that fuelled speculation on soy's anticarcinogenic properties.43 Messina noted that in 26 animal studies, 65 per cent reported protective effects from soy. He conveniently neglected to include at least one study in which soy feeding caused pancreatic cancer - the 1985 study by Rackis.44 In the human studies he listed, the results were mixed. A few showed some protective effect, but most showed no correlation at all between soy consumption and cancer rates. He concluded that "the data in this review cannot be used as a basis for claiming that soy intake decreases cancer risk". Yet in his subsequent book, *The Simple Soybean and Your Health*, Messina makes just such a claim, recommending one cup or 230 grams of soy products per day in his "optimal" diet as a way to prevent cancer.

Thousands of women are now consuming soy in the belief that it protects them against breast cancer. Yet, in 1996, researchers found that women consuming soy protein isolate had an increased incidence of epithelial hyperplasia, a condition that presages malignancies.45 A year later, dietary genistein was found to stimulate breast cells to enter the cell cycle - a discovery that led the study authors to conclude that women should not consume soy products to prevent breast cancer.46

PHYTOESTROGENS: PANACEA OR POISON?

The male species of tropical birds carries the drab plumage of the female at birth and 'colours up' at maturity, somewhere between nine and 24 months.

In 1991, Richard and Valerie James, bird breeders in Whangerai, New Zealand, purchased a new kind of feed for their birds - one based largely on soy protein.47 When soy-based feed was used, their birds 'coloured up' after just a few months. In fact, one bird-food manufacturer claimed that this early development was an advantage imparted by the feed. A 1992 ad for Roudybush feed formula showed a picture of the male crimson rosella, an Australian parrot that acquires beautiful red plumage at 18 to 24 months, already brightly coloured at 11 weeks old.

Unfortunately, in the ensuing years, there was decreased fertility in the birds, with precocious maturation, deformed, stunted and stillborn babies, and premature deaths, especially among females, with the result that the total population in the aviaries went into steady decline. The birds suffered beak and bone deformities, goitre, immune system disorders and pathological, aggressive behaviour. Autopsy revealed digestive organs in a state of disintegration. The list of problems corresponded with many of the problems the Jameses had encountered in their two children, who had been fed soy-based infant formula.

Startled, aghast, angry, the Jameses hired toxicologist Mike Fitzpatrick. PhD, to investigate further. Dr Fitzpatrick's literature review uncovered evidence that soy consumption has been linked to numerous disorders, including infertility, increased cancer and infantile leukaemia; and, in studies dating back to the 1950s,48 that genistein in soy causes endocrine disruption in animals. Dr Fitzpatrick also analysed the bird feed and found that it contained high levels of phytoestrogens, especially genistein. When the Jameses discontinued using soy-based feed, the flock gradually returned to normal breeding habits and behaviour.

The Jameses embarked on a private crusade to warn the public and government officials about toxins in soy foods, particularly the endocrine-disrupting isoflavones, genistein and diadzen. Protein Technology International received their material in 1994.

In 1991, Japanese researchers reported that consumption of as little as 30 grams or two tablespoons of soybeans per day for only one month resulted in a significant increase in thyroid-stimulating hormone.49 Diffuse goitre and hypothyroidism appeared in some of the subjects and many complained of constipation, fatigue and lethargy, even though their intake of iodine was adequate. In 1997, researchers from the FDA's National

Center for Toxicological Research made the embarrassing discovery that the goitrogenic components of soy were the very same isoflavones.50
Twenty-five grams of soy protein isolate, the minimum amount PTI claimed to have cholesterol-lowering effects, contains from 50 to 70 mg of isoflavones. It took only 45 mg of isoflavones in premenopausal women to exert significant biological effects, including a reduction in hormones needed for adequate thyroid function. These effects lingered for three months after soy consumption was discontinued.51

One hundred grams of soy protein - the maximum suggested cholesterol-lowering dose, and the amount recommended by Protein Technologies International - can contain almost 600 mg of isoflavones,52 an amount that is undeniably toxic. In 1992, the Swiss health service estimated that 100 grams of soy protein provided the oestrogenic equivalent of the Pill.53
In vitro studies suggest that isoflavones inhibit synthesis of oestradiol and other steroid hormones.54 Reproductive problems, infertility, thyroid disease and liver disease due to dietary intake of isoflavones have been observed for several species of animals including mice, cheetah, quail, pigs, rats, sturgeon and sheep.55

It is the isoflavones in soy that are said to have a favourable effect on postmenopausal symptoms, including hot flushes, and protection from osteoporosis. Quantification of discomfort from hot flushes is extremely subjective, and most studies show that control subjects report reduction in discomfort in amounts equal to subjects given soy.56 The claim that soy prevents osteoporosis is extraordinary, given that soy foods block calcium and cause vitamin D deficiencies. If Asians indeed have lower rates of osteoporosis than Westerners, it is because their diet provides plenty of vitamin D from shrimp, lard and seafood, and plenty of calcium from bone broths. The reason that Westerners have such high rates of osteoporosis is because they have substituted soy oil for butter, which is a traditional source of vitamin D and other fat-soluble activators needed for calcium absorption.

BIRTH CONTROL PILLS FOR BABIES

But it was the isoflavones in infant formula that gave the Jameses the most cause for concern. In 1998, investigators reported that the daily exposure of infants to isoflavones in soy infant formula is 6 to11 times higher on a body-weight basis than the dose that has hormonal effects in adults consuming soy foods. Circulating concentrations of isoflavones in infants

fed soy-based formula were 13,000 to 22,000 times higher than plasma oestradiol concentrations in infants on cow's milk formula.57
Approximately 25 per cent of bottle-fed children in the US receive soy-based formula - a much higher percentage than in other parts of the Western world. Fitzpatrick estimated that an infant exclusively fed soy formula receives the oestrogenic equivalent (based on body weight) of at least five birth control pills per day.58 By contrast, almost no phytoestrogens have been detected in dairy-based infant formula or in human milk, even when the mother consumes soy products.

Scientists have known for years that soy-based formula can cause thyroid problems in babies. But what are the effects of soy products on the hormonal development of the infant, both male and female?

Male infants undergo a "testosterone surge" during the first few months of life, when testosterone levels may be as high as those of an adult male. During this period, the infant is programmed to express male characteristics after puberty, not only in the development of his sexual organs and other masculine physical traits, but also in setting patterns in the brain characteristic of male behaviour. In monkeys, deficiency of male hormones impairs the development of spatial perception (which, in humans, is normally more acute in men than in women), of learning ability and of visual discrimination tasks (such as would be required for reading).59 It goes without saying that future patterns of sexual orientation may also be influenced by the early hormonal environment. Male children exposed during gestation to diethylstilbestrol (DES), a synthetic oestrogen that has effects on animals similar to those of phytoestrogens from soy, had testes smaller than normal on manturation.60

Learning disabilities, especially in male children, have reached epidemic proportions. Soy infant feeding - which began in earnest in the early 1970s - cannot be ignored as a probable cause for these tragic developments.
As for girls, an alarming number are entering puberty much earlier than normal, according to a recent study reported in the journal *Pediatrics*.61 Investigators found that one per cent of all girls now show signs of puberty, such as breast development or pubic hair, before the age of three; by age eight, 14.7 per cent of white girls and almost 50 per cent of African-American girls have one or both of these characteristics.

New data indicate that environmental estrogens such as PCBs and DDE (a breakdown product of DDT) may cause early sexual development in girls.62 In the 1986 Puerto Rico Premature Thelarche study, the most significant dietary association with premature sexual development was not chicken - as reported in the press - but soy infant formula.63

The consequences of this truncated childhood are tragic. Young girls with mature bodies must cope with feelings and urges that most children are not well-equipped to handle. And early maturation in girls is frequently a harbinger for problems with the reproductive system later in life, including failure to menstruate, infertility and breast cancer.

Parents who have contacted the Jameses recount other problems associated with children of both sexes who were fed soy-based formula, including extreme emotional behaviour, asthma, immune system problems, pituitary insufficiency, thyroid disorders and irritable bowel syndrome - the same endocrine and digestive havoc that afflicted the Jameses' parrots.

DISSENSION IN THE RANKS

Organisers of the Third International Soy Symposium would be hard-pressed to call the conference an unqualified success. On the second day of the symposium, the London-based Food Commission and the Weston A. Price Foundation of Washington, DC, held a joint press conference, in the same hotel as the symposium, to present concerns about soy infant formula. Industry representatives sat stony-faced through the recitation of potential dangers and a plea from concerned scientists and parents to pull soy-based infant formula from the market. Under pressure from the Jameses, the New Zealand Government had issued a health warning about soy infant formula in 1998; it was time for the American government to do the same.

On the last day of the symposium, presentations on new findings related to toxicity sent a well-oxygenated chill through the giddy helium hype. Dr Lon White reported on a study of Japanese Americans living in Hawaii, that showed a significant statistical relationship between two or more servings of tofu a week and "accelerated brain aging".64 Those participants who consumed tofu in mid-life had lower cognitive function in late life and a greater incidence of Alzheimer's disease and dementia. "What's more," said Dr White, "those who ate a lot of tofu, by the time they were 75 or 80 looked five years older".65 White and his colleagues blamed the negative

effects on isoflavones - a finding that supports an earlier study in which postmenopausal women with higher levels of circulating oestrogen experienced greater cognitive decline.66

Scientists Daniel Sheehan and Daniel Doerge, from the National Center for Toxicological Research, ruined PTI's day by presenting findings from rat feeding studies, indicating that genistein in soy foods causes irreversible damage to enzymes that synthesise thyroid hormones.67 "The association between soybean consumption and goiter in animals and humans has a long history," wrote Dr Doerge. "Current evidence for the beneficial effects of soy requires a full understanding of potential adverse effects as well."

Dr Claude Hughes reported that rats born to mothers that were fed genistein had decreased birth weights compared to controls, and onset of puberty occurred earlier in male offspring.68 His research suggested that the effects observed in rats "...will be at least somewhat predictive of what occurs in humans. There is no reason to assume that there will be gross malformations of fetuses but there may be subtle changes, such as neurobehavioral attributes, immune function and sex hormone levels." The results, he said, "could be nothing or could be something of great concern...if mom is eating something that can act like sex hormones, it is logical to wonder if that could change the baby's development".69

A study of babies born to vegetarian mothers, published in January 2000, indicated just what those changes in baby's development might be. Mothers who ate a vegetarian diet during pregnancy had a fivefold greater risk of delivering a boy with hypospadias, a birth defect of the penis.70 The authors of the study suggested that the cause was greater exposure to phytoestrogens in soy foods popular with vegetarians. Problems with female offspring of vegetarian mothers are more likely to show up later in life. While soy's estrogenic effect is less than that of diethylstilbestrol (DES), the dose is likely to be higher because it's consumed as a food, not taken as a drug. Daughters of women who took DES during pregnancy suffered from infertility and cancer when they reached their twenties.

QUESTION MARKS OVER GRAS STATUS

Lurking in the background of industry hype for soy is the nagging question of whether it's even legal to add soy protein isolate to food. All food additives not in common use prior to 1958, including casein protein from milk, must have GRAS (Generally Recognized As Safe) status. In 1972, the

Nixon administration directed a re-examination of substances believed to be GRAS, in the light of any scientific information then available. This re-examination included casein protein which became codified as GRAS in 1978. In 1974, the FDA obtained a literature review of soy protein because, as soy protein had not been used in food until 1959 and was not even in common use in the early 1970s, it was not eligible to have its GRAS status grandfathered under the provisions of the Food, Drug and Cosmetic Act.71 The scientific literature up to 1974 recognised many antinutrients in factory-made soy protein, including trypsin inhibitors, phytic acid and genistein. But the FDA literature review dismissed discussion of adverse impacts, with the statement that it was important for "adequate processing" to remove them. Genistein could be removed with an alcohol wash, but it was an expensive procedure that processors avoided. Later studies determined that trypsin inhibitor content could be removed only with long periods of heat and pressure, but the FDA has imposed no requirements for manufacturers to do so.

The FDA was more concerned with toxins formed during processing, specifically nitrites and lysinoalanine.72 Even at low levels of consumption - averaging one-third of a gram per day at the time - the presence of these carcinogens was considered too great a threat to public health to allow GRAS status.

Soy protein did have approval for use as a binder in cardboard boxes, and this approval was allowed to continue, as researchers considered that migration of nitrites from the box into the food contents would be too small to constitute a cancer risk. FDA officials called for safety specifications and monitoring procedures before granting of GRAS status for food. These were never performed. To this day, use of soy protein is codified as GRAS only for this limited industrial use as a cardboard binder. This means that soy protein must be subject to premarket approval procedures each time manufacturers intend to use it as a food or add it to a food.

Soy protein was introduced into infant formula in the early 1960s. It was a new product with no history of any use at all. As soy protein did not have GRAS status, premarket approval was required. This was not and still has not been granted. The key ingredient of soy infant formula is not recognised as safe.

THE NEXT ASBESTOS?

"Against the backdrop of widespread praise...there is growing suspicion that soy - despite its undisputed benefits - may pose some health hazards," writes Marian Burros, a leading food writer for the *New York Times.* More than any other writer, Ms Burros's endorsement of a low-fat, largely vegetarian diet has herded Americans into supermarket aisles featuring soy foods. Yet her January 26, 2000 article, "Doubts Cloud Rosy News on Soy", contains the following alarming statement: "Not one of the 18 scientists interviewed for this column was willing to say that taking isoflavones was risk free." Ms Burros did not enumerate the risks, nor did she mention that the recommended 25 daily grams of soy protein contain enough isoflavones to cause problems in sensitive individuals, but it was evident that the industry had recognised the need to cover itself.

Because the industry is extremely exposed...contingency lawyers will soon discover that the number of potential plaintiffs can be counted in the millions and the pockets are very, very deep. Juries will hear something like the following: "The industry has known for years that soy contains many toxins. At first they told the public that the toxins were removed by processing. When it became apparent that processing could not get rid of them, they claimed that these substances were beneficial. Your government granted a health claim to a substance that is poisonous, and the industry lied to the public to sell more soy."

The "industry" includes merchants, manufacturers, scientists, publicists, bureaucrats, former bond financiers, food writers, vitamin companies and retail stores. Farmers will probably escape because they were duped like the rest of us. But they need to find something else to grow before the soy bubble bursts and the market collapses: grass-fed livestock, designer vegetables...or hemp to make paper for thousands and thousands of legal briefs.

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DEPRESSION

Some people do not admit sadness or guilt; instead they withdraw and hide from society. They lose all interest in things around them and become incapable of any pleasure. Things appear bleak and time passes slowly for them. They are typically angry and irritable. They often try sleeping off their depression or do nothing but sit or lay around. In most people depression is not severe. They can still function, but do so at a lower capacity and at a slower pace.

SYMPTOMS OF DEPRESSION

Symptoms of depression include chronic fatigue syndrome, insomnia or sleeping frequently and for excessive periods of time, loss of appetite or a ravenous appetite, headaches, backaches, colon disorders, and feelings of worthlessness and inadequacy. Many think of death and consider suicide.

CAUSES OF DEPRESSION

Depression may be caused by tension, upset stomach, stress, headache, nutritional deficiencies, poor diet, sugar, mononucleosis, thyroid disorders, endometriosis (linked to depression in women), any serious physical disorder, or allergies. Some people become more depressed in the winter months when days are shorter and darker. The sun and bright light seem to trigger a response to a brain hormone known as melatonin (produced by the pineal gland), which is, in part, responsible for preventing the "blues." Stay in brightly lit rooms on dark days. Research reveals that two hours of morning sun is very effective in lifting depression, the evening light had comparatively little results.

Depression begins with a disturbance in the part of the brain that governs moods. Most people can handle everyday stresses; their bodies readjust to these pressures. When stress is too great for a person and his adjustment mechanism is unresponsive, depression may be triggered.

INFLUENCE OF DIET ON DEPRESSION

It has been discovered that foods greatly influence the brain's behavior. Diet is most often the cause of depression, related to poor eating habits and constant snacking on junk foods. The brain's neurotransmitters, which regulate our behavior, are controlled by what we eat. The neurotransmitters are dopamine, serotonin, and norepinephrine. When the brain produces serotonin, tension is eased. When it is produces dopamine or

norepinephrine, we tend to think and act more quickly and are generally more alert.

CALMING EFFECT OF CARBOHYDRATES

Eating carbohydrates alone seems to have a calming effect, while proteins increase alertness. Protein meals containing essential fatty acids and/or carbohydrates are recommended for increased alertness. Avoid foods high in saturated fats; consumption of pork or fried foods, such as hamburgers and French fries, leads to sluggishness, slow thinking, and fatigue. Fats inhibit the synthesis of neurotransmitters by the brain in that they cause the blood cells to become sticky and to clump together, resulting in poor circulation, especially to the brain.

IMPORTANCE OF NEUROTRANSMITTERS

At the neurochemical and physiological level, neurotransmitters are extremely important. These substances carry impulses between nerve cells. The substance that processes the neurotransmitter called serotonin is the amino acid tryptophan. It increases the amount of serotonin made by the brain. Complex carbohydrates, which raise the level of tryptophan in the brain, have a calming effect; protein promotes the production of dopamine and norepinephrine, which promote alertness. A balance is achieved when the diet contains a combination of these two nutrients.

CARBOHYDRATES TO RELAX, PROTEIN TO BECOME ALERT

Consume more carbohydrates than protein if you are nervous and wish to become more relaxed or eat more protein than carbohydrates if you are tired and wish to become more alert. A depressed person who needs his spirits lifted would benefit from eating foods which are high in tryptophan and protein.

Beware: The body will react more quickly to the presence of sugar than it does to the presence of complex carbohydrates. The increase in energy supplied by the simple carbohydrates is quickly accompanied by fatigue and depression.

IMPORTANCE OF AMINO ACIDS

Tyrosine is also needed for brain function. This amino acid may be good for those who have prolonged and intense stress. Uncontrollable stress may thereby be prevented or reversed if this essential amino acid is obtained in the diet.

HEREDITY AND DEPRESSION

Heredity is a significant factor in depression. In up to 50 percent of people suffering from recurrent episodes of depression, one or both of the parents were depressive.

RECOMMENDATIONS

- A raw fruit and vegetable diet, with soybeans and their by-products, is important. Diets too low in complex carbohydrates can cause serotonin depletion and depression.
- Avoid phenylalanine supplements if you suffer from anxiety attacks.
- Those suffering from manic depression should avoid choline, ornithine and arginine. These substances may make the disorder worse.
- Take the underarm test to detect an underactive thyroid. If the temperature is low, take a thyroid extract product.
- If taking MAO inhibitor drugs, avoid tyrosine. It can raise the blood pressure. Also consume the following foods in moderation: avocados, raisins, soy sauce, yeast extracts.
- Beware of hypoglycemia, allergies, hypothyroid, and malabsorption. In these conditions vitamin B12 and folic acid are blocked from entering the system, thus leading to depression.
- Keep your mind active and get plenty of rest. Avoid stressful situations as much as possible.
- Steroid drugs and oral contraceptives may cause serotonin levels in the brain to drop.
- Take a Liquid Tonic such as Floradex based on Iron, no alcohol content.

MANIC DEPRESSION

This is a psychosis that is characterized by extreme mood swings. The typical manic-depressive individual will go from a period of unrealistic enthusiasm and elation to misery and the depths of depression. When he is in the depressive stage, he will demonstrate low self- esteem and have feelings of hopelessness. He will lack motivation to do anything, even to get out of bed. Some people in this stage sleep for weeks. They withdraw from social activities, avoid relationships with others, and are unable to work.

THE MANIC STAGE

When in the manic stage, the manic-depressive individual will have what seems to be boundless energy. He will not want to rest or sleep for twenty-four hours or more.

The periods of mania start suddenly and without warning. They appear for no known reason and worsen rapidly. Some patients have these attacks frequently, and others have years between occurrences. Most people who suffer from this disorder seem relatively normal between stages. Approximately 3 percent of the population of the United States suffers from this disorder.

SYMPTOMS OF MANIC-DEPRESSIVE DISORDER

Some of the symptoms of manic-depressive disorder are changes in sleep pattern, withdrawal from society, extreme pessimism, failure to finish projects that were started with enthusiasm, chronic irritability, sudden attacks of rage, and lack of inhibition, especially in sexual behavior.

CAUSES OF MANIC-DEPRESSIVE DISORDER

There are several theories for the causes of this disorder. It may be triggered by extreme stress. Some researchers believe that early experiences, such as the loss of a parent or other early childhood trauma, play an important role in its cause. There is also evidence of increased concentration of intracellular sodium during these mood swings, which returns to normal after recovery. In the depressed individual, mono-amines are depleted in the brain.

RECOMMENDATIONS

- The patient should have no sugar or its by-products (read labels!). Dairy products, alcohol, soda, and caffeine should not be taken by

persons with this disorder. Avoid foods with added chemicals, additives, or food colorings.

- The diet should consist of vegetables, fruits, nuts, seeds, beans, and legumes. Whole grains are recommended, but avoid excessive consumption of bread..
- High doses of B-complex vitamins are needed because the manic-depressive does not absorb the B complex easily.

CONSIDERATIONS

- The New England journal of Medicine (1984) reported that individuals with depression and manic depression appear to be hypersensitive to acetyl-choline, a chemical that carries messages to the brain. Therefore, choline should not be taken in a dose that exceeds the amount in a multiple vitamin.
- The journal of Orthomolecular Psychiatry (1979) reported that manic depressives had deficiencies of the B-complex vitamins and that improvement in their conditions occurred with BI2 injections and megadoses of the B vitamins. The B vitamins have a lithium-like effect on the brain. The trace metal lithium is known to alter the period of the rhythmic cycling and helps the manic depressive.
- The high doses used in lithium treatment may include the following side effects: nausea, vomiting, tremors, kidney dysfunction, and thyroid enlargement.
- Amino acids are important in the treatment of this disorder, especially taurine and tyrosine.
- Certain foods may trigger an attack.

NOTE:

- For additional information on Nutrients and suggested Supplements, refer to Prescription for Nutritional Healing, James F. Balch, M.D., Phyllis A. Balch, C.N.C., 1990.

10 DAYS LIFESTYLE PROGRAM

INTRODUCTION:
THIS METHOD HAS BEEN SUCCESSFULLY USED TO HELP PEOPLE WITH DEPRESSION.

METHOD:
1. Based on the Twelve Steps program, this method has been adapted to include a Health program to cleanse the body from toxins assimilated at the level of the liver, kidneys, lungs, and any other organs and systems of the body. It involves a physical, mental and spiritual approach and is geared to the whole person.

2. To start, fill up the Health-Evaluation and as you answer the questions, find out which of the 8 Laws of Health you may have failed to follow by choosing one that may correspond to the question. There could be 2 or more laws involved. (See Health Evaluation at the end of program)

3. The program is based on a 10 days Lifestyle program which takes all of the 8 laws of Health into consideration and the 12 Steps program. You should be willing to follow this program as closely as possible for ultimate results. One the major common denominator of depression is lack of a scheduled daily routine.

DAY 1 TO 10 BASIC SCHEDULE:
A. WATER: Every morning, start the day early by drinking 8 ounces of water with 1 teaspoon of lemon juice and a pinch of cayenne pepper. Water can be prepared in a larger quantity. Drink at room temperature. Drink a minimum of ten 8 ounce glasses a day of this preparation. It helps eliminate mucus and adjust the pH.

SHOWER AND BATH: Every morning, take a neutral shower, starting first with hot water, as warm as you can bear (do not burn yourself) for about 3 minutes than switch to as cold water as you can take for about 30 seconds. Repeat processes 2-3 times, hot and cold and finish with cold. Always direct the shower head towards the base of the skull at the rear of the head, by the occiput - the lower area of the skull - when using cold water.

Every evening, prepare warm bath with essential oils that calm the nerves and add 1 cup of Epsom salt. Do not end with cold water.

B. CHARCOAL: Every morning and evening, take 1 soupspoon of Activated Charcoal mixed in a glass of spring water. If on medication, drink charcoal 4 hours apart. The powdered activated charcoal is the most effective as it adsorbs through the blood stream rather than through the digestive system. Continue to drink 1 soupspoon of charcoal in water for the next 3 weeks after starting the program.

For the best quality Charcoal, call: Orion Inc., Quebec, Canada, 1-819-848-2888.

C. NUTRITION: Raw food is the best nutrition during these 10 days. Abstain from all condiments: ketchup, mustard, relish, vinegar, pickle, salad dressing with vinegar and mayonnaise. Avoid all deep fried food (at all times). Eat plenty of green vegetables and fresh fruits. Do not mix fruits and vegetables at the same meal. Cooked cereals and bread can be eaten during the 10 days. Use only unrefined flour and whole grains.
Once a day: prepare 10 ounces of carrot juice (organic carrots are sweeter).
Drink half an hour before main meal.
Do not drink anything with your meal.

D. EXERCISE - FRESH AIR - SUNSHINE: Daily exercise is very important. Walk, bike or work in the garden at least 1 hour a day. Breathe deeply and drink plenty of water.

E. TEMPERANCE: Special attention should be given to practice all of these principles faithfully and in balanced measure. Overeating, excessive exercising or taking more charcoal than needed is not recommended.

F. REST: 2 to 3 hours of rest before midnight are always more beneficial than many hours after midnight. Sleep at least 7 to 8 hours a day. Abstain from food 3 to 4 hours before sleep. If you suffer from insomnia, drink a hot cup of herbal tea 1- hour before retiring to bed (chamomile, vervain or valerian), and recite Psalm 23. Talk to the Shepherd instead of counting the sheep!

G. TRUST IN GOD: This 10 Day Program has been set up as a holistic program: body, mind and soul. It is based on the Twelve Steps of Alcoholics Anonymous and has been adapted with their permission. The whole basis

of the Way of Life Program is to care not only for the body but also for the mind. A 1-hour daily reading program is recommended, preferably in the morning, as you would want to start the day with a good spiritual breakfast. The book "Serenity" is highly recommended as it offers a planned daily reading schedule and combines the Twelve Steps with the Bible.

CONCLUSION:
This program is usually finished with a Russian bath and complete body massage.

Note: Refer to File 24 for a further study of the Twelve Steps to Health

"I wish above all things that you may prosper and be in health even as your soul prospers."
3 John 2.

HEALTH-EVALUATION

1	Do you enjoy physical activity such as a brisk, one mile walk?
2	Do you ever feel chilly or have cold skin on any body part?
3	Do you have a set mealtime? Do you think you eat too much?
4	Do you frequently have colds?
5	Do you use tobacco? alcohol? caffeine? medication?
6	Do you fall asleep when sitting still? How many hours of sleep do you get per night? What time to you go to bed at night?
7	Do you have pain or discomfort in head? trunk? or extremities?
8	Do you have one or more bowel evacuations daily? how many?
9	Do you have pale urine? how many glasses of water do you drink daily?
10	Do you have allergies? Hay fever? Skin problems? Sinusitis?
11	Do you have frequent infections? or accidents?
12	Do you ever feel depressed or gloomy?
13	Do you frequently have gas? indigestion?
14	Are you developing your mental and spiritual capabilities by daily study, meditation and prayer?
15	Would you like to be instructed in how to restore your health and prevent sicknesses and diseases naturally?

8 Laws of Health

TEST TO WARN THE PEOPLE

T rust in God 

E xercise 

S unshine 

T emperance 

W ater 

A ir 

R est 

N utrition FRUIT NUTS VEG GRAIN

TRUST IN GOD

BENEFITS:
1. Peace of mind in whatever state we are in
2. Strengthens the immune system

QUANTITY:
Unlimited

CONCERN:
Not enough

SPIRITUAL ANALOGUE:
God's Dependability
"But they that wait upon the LORD shall renew their strength; they shall mount up with wings as eagles; they shall run, and not be weary; and they shall walk, and not faint." Isaiah 40:31

EXERCISE

BENEFITS:

1. Tones muscles and blood vessels, changing them from weak and flabby tissue to strong and firm tissues, often reducing blood pressure
2. Strengthens heart
3. Improves digestion
4. Increases efficiency of lungs and number of blood cells
5. Imparts added protection against sickness
6. Better sleep
7. Think more clearly; strengthen the will
8. Build endurance
9. Helps control body weight

QUANTITY:

1. Balanced amount each day
2. Walking is the best form

CONCERN:

1. Immediately after eating, hinders digestion
2. Excessive may be harmful

SPIRITUAL ANALOGUE:

Exercise Living Faith
"The just shall live by faith" Habakuk 2:4

SUNSHINE

BENEFITS:
1. Lowers heart rate and blood pressure
2. Strengthens the heart
3. Increases oxygen content of the blood
4. Decreases blood cholesterol
5. Increases white blood cells
6. Vitamin D is produced by sunlight

QUANTITY:
Six inch square of face or hands for about one hour each day

CONCERN:
Too much especially when on a high fat diet may lead to skin poisoning or cancer

SPIRITUAL ANALOGUE:
The Savior is the Sun of Righteousness
"But unto you that fear my name shall the Sun of righteousness arise with healing in his wings." Malachi 4:2

TEMPERANCE

BENEFITS:
Keep everything at a safe, balanced level

QUANTITY:
Unlimited but not to extremes

CONCERN:
Not enough

SPIRITUAL ANALOGUE:
Spiritual Discernment
"And every man that striveth for the mastery is temperate in all things. Now they do it to obtain a corruptible crown; but we an incorruptible." 1 Corinthians 9:25

WATER

BENEFITS:

1. Cleanses tissues
2. Aids circulatory systems
3. Transports nutrients and wastes
4. Increases elimination of the mucous membrane of the intestinal tract which is an important organ of secretion
5. Cleanses blood; aids waste and repair
6. Many diseases of mankind would not exist if people drank adequate amount of water

QUANTITY:

1. Drink 1 hour before and after meals; otherwise it may affect the digestion
2. Drink 2-3 quarts daily
3. Room temperature is the best - not too cold, not too hot

CONCERN:

1. More than 3 weeks without water leads to death (>20% body loss)
2. Not enough water causes toxins and diseases to accumulate and develop within the body
3. Cold water tends to slow down the emptying time of the digestive track

SPIRITUAL ANALOGUE:

Born of water and of the Holy Spirit

"Jesus answered, Verily, verily, I say unto thee, Except a man be born of water and of the Spirit, he cannot enter into the kingdom of God." John 3: 5

AIR

BENEFITS:
1. Helps fill lungs with oxygen and purify the blood
2. Trillions of cells need air to remain healthy
3. Negatively charged ions in open air good for the body and brain
4. Purifies, destroys or renders inactive bacteria, viruses and other harmful substances

QUANTITY:
1. Plenty of fresh country air is the best
2. Essential for life
3. Breathe deeply (diaphragm out when inhaling through the nose; diaphragm in when exhaling through the mouth)

CONCERN:
1. Insufficient air can affect the brain and all parts of the body
2. Heavily polluted air impairs health
3. After 4 minutes, death occurs (brain damage)

SPIRITUAL ANALOGUE:
Prayer
"Let every thing that hath breath praise the LORD. Praise ye the LORD."
Psalm 150: 6

REST

BENEFITS:
1. Decreases muscle tension
2. Increases natural hormones which act as a tranquilizer

QUANTITY:
1. 7 to 8 hours of sleep is recommended
2. Optimum hours include 9:00-12:00 p.m.
3. Have regular hours for bedtime

CONCERN:
1. Plenty of fresh air must circulate in the bedroom
2. Sleeping too soon after eating (wait 3-4 hours)

SPIRITUAL ANALOGUE:
The People of God May Rest in Him
"There remained therefore a rest to the people of God." Hebrews 4:9

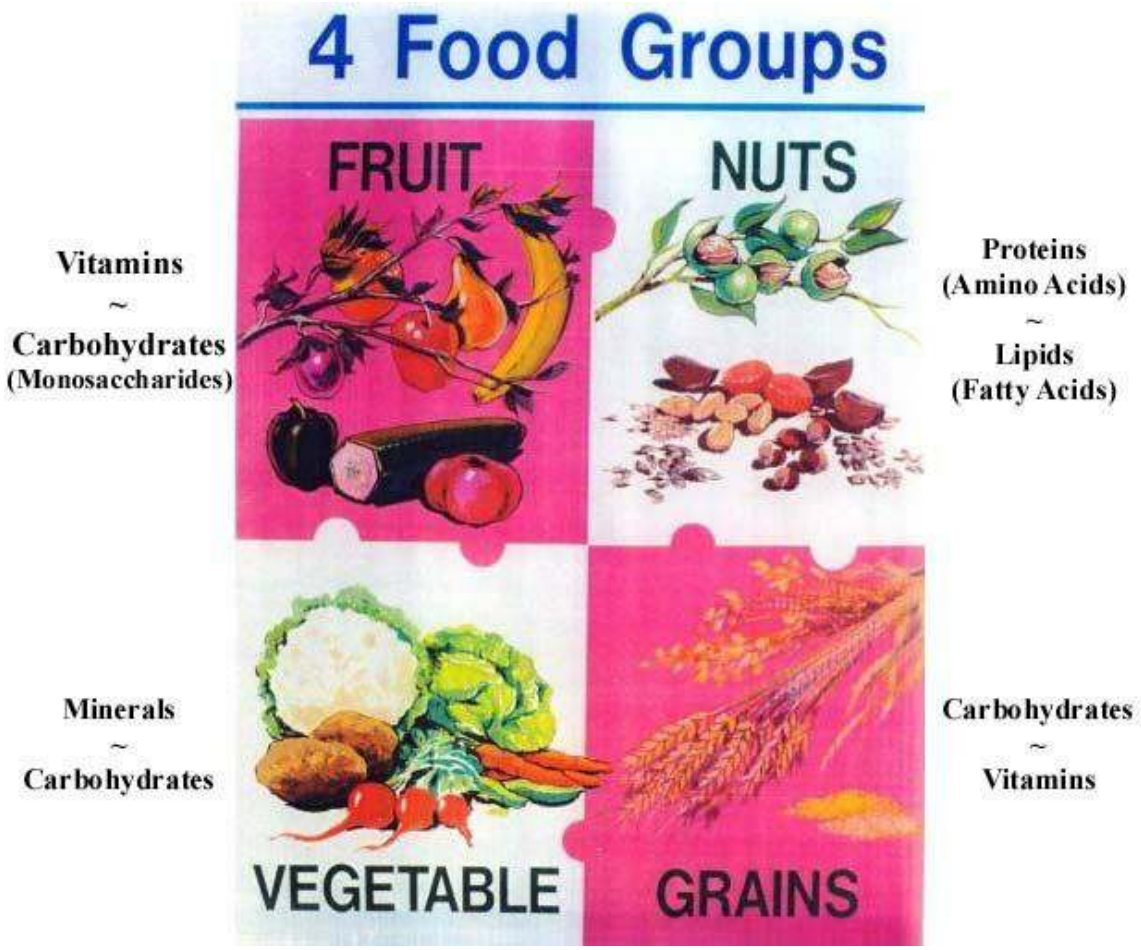
NUTRITION

BENEFITS:
1. The best nutrition: fruits, nuts, grains, vegetables
2. Aids health of whole body
3. Live foods produce healthy blood

QUANTITY: View Image (See following p. 128)
1. 10% protein (nuts and legumes Ex. soya)
2. 10% fats (nuts)
3. 50% carbohydrates & vitamins (grains - whole non-refined & fruits)
4. 30% minerals (vegetables)
5. Drink your food and chew your water (masticate well)
6. 2 meals a day are preferable to 3; if eating 3 meals, make the 3rd meal small
7. Because of difference in enzymes, do not mix fruits and vegetables at the same meal; eating fruits for supper help evening digestion

CONCERN:
1. Do not overeat - do not under eat
2. Make sure meals are well balanced
3. Do not eat even a peanut between meals
4. Wait at least 5 hours between meals

SPIRITUAL ANALOGUE:
The Word of God is the Living Bread
"Man shall not live by bread alone, but by every word that proceeds from the mouth of God." Luke 4:4



The 6 Principal Classes of Body Nutrients Are: Carbohydrates, Proteins, Lipids, Vitamins, Minerals, and Water

- Carbohydrates, proteins and lipids are digested by enzymes.
- Some minerals and many vitamins are part of enzyme system that catalyze the reactions undergone by: carbohydrates, proteins and lipids.
- These 6 nutrients are chemical substances in food that provide energy, form new body components, or assist in the functioning of various body processes.

PARASITES: THE UNINVITED GUESTS

Are you having difficulty shaking off an illness? Are you suffering from chronic fatigue? Do you have a health problem your doctor cannot identify? Parasites in your body may be the cause. Many people think that parasitic diseases happen only to people in Third World countries. The rate of parasitic-related disorders in North America is skyrocketing. An astounding one out of six people will test positive for parasites.

Is there anything you can do to protect yourself and your family from this very real epidemic? Yes, there is. Following is an easy-to-understand guide that gives you the information you need to guard against these unwelcome organisms. It explains what parasites are, why they are harmful, and how they are spread. The symptoms of parasitic diseases-symptoms are easily confused with other common health disorders and treatments are available to combat parasites with practical advice on how to parasite-proof your diet and your lifestyle.

For many people, the topic of parasites is offensive, but ignoring the problem will not make it go away. The growing threat of parasitic disease is real, is dangerous, and is here. Becoming intelligent about this subject allows to take an important first step in defending the body from this hidden epidemic.

"We have a tremendous parasite problem right here in the United States-it's just not being identified." -Peter Weina, Ph.D., Chief of Pathobiology, Walter Reed Army Institute of Research, 1991

"I strongly believe that every patient with disorders of immune junction, including multiple allergies (especially food allergy), and patients with unexplained fatigue or with chronic bowel symptoms should be evaluated for the presence of intestinal parasites." -Leo Galland, M.D. Townsend Letter for Doctors, 1988

"Make no mistake about it, worms are the most toxic agents in the human body. They are one of the primary underlying causes of disease and are the most basic cause of a compromised immune system." -Hazel Parcells, D.C., N.D., Ph.D., 1974

NEW DISEASES: OLD PROBLEMS

Americans today are host to more than 130 different kinds of parasites, ranging from microscopic organisms to foot-long tapeworms. Practically every imaginable kind of exotic parasitic disease has been found on our shores -African sleeping sickness, toxoplasmosis, schistosomiasis, giardiasis, amebiasis, filariasis- unpronounceable to most of us, but potentially deadly nevertheless. Even malaria is making a comeback, with cases of this mosquito-borne tropical disease being reported as close to home as New Jersey, Virginia, Texas, and California!

Parasites are an insidious public health threat in the United States today. Insidious because so very few people are talking about parasites, and even fewer people are listening. Insidious because of the common misconception, among physicians and the general public alike, that parasites occur only in tropical Third World countries, areas traditionally associated with malnutrition and poor hygienic practices. Insidious because physicians do not suspect, and therefore do not recognize, classic symptoms. And insidious because even if physicians are aware of the threat, most use outdated and inadequate testing procedures, which result in underdiagnosis.

PARASITOLOGY: UNKNOWN PATHOLOGY IN AMERICA

Lack of education is to blame. In the United States, physicians are simply not educated in parasitology and are, therefore, inexperienced in recognizing common clinical symptoms. A doctor's introduction to parasitology may come from a chapter here and there in a microbiology course in medical school. If parasitology itself is taught at all, it is as a specialty in the department of tropical medicine at some universities. Courses in these departments are not often elected by medical students who believe they will not be seeing" tropical medicine" problems in their general practices in the United States.

Yet times have changed and parasites are much more widespread than previously believed. An article appearing in the June 27, 1978, Miami Herald states that a nation-wide survey conducted by the Centers for Disease Control (CDC) in 1976 revealed that one in every six people selected at random had one or more parasites. The survey also pinpointed a parasite known as Giardia lamblia as the number one culprit in water-borne disease.

Louis Parrish, M.D., a New York City physician who specializes in parasites, wrote in 1991, "Based upon my experience, I estimate in the New York metropolitan area that 25 percent of the population is infected. . . . " Projections for the year 2025 suggest that more than half of the 8.3 billion people on Earth will then be infected with parasitic diseases.

HOW DID IT HAPPEN?

A number of seemingly unrelated factors unique to the late twentieth century have contributed to the unrestrained parasite epidemic and added to the increased risk of parasitic infection. Some of these factors include:

- The rise in international travel.
- The contamination of municipal and rural water supplies.
- The increasing use of day-care centers.
- The influx of refugee and immigrant populations from --- endemic areas.
- The return of armed forces from overseas.
- The continued popularity of household pets.
- The increasing popularity of exotic regional foods.
- The use of antibiotics and immunosuppressive drugs.
- The sexual revolution.
- The spread of AIDS.

WARNING SIGNS

Over half of all Americans will at some point in their lives become hosts to parasites, according to health experts! Since the effects of infection reach far beyond the gastrointestinal tract, it behooves all of us to be on the alert for the wide array of bodily symptoms that signal the presence of parasites. Signs and symptoms may come about during initial exposure, shortly after that exposure, or many months later. What many of us are attributing to old age, stress, or plain old poor health may, in fact, be due to an uninvited guest.

The word "parasite" is from the Greek words para (meaning beside) and sitos (meaning food). Most medical dictionaries define a parasite as "an animal or plant that lives on or in another organism from which it obtains nutriment." A basic element in the parasite definition is that a parasite is "usually injuring" or "without contributing to survival." The relationship that is formed between the two organisms is defined as "parasitism." The present study is based on endoparasites, which live inside the body, rather

than ectoparasites, which live on the body like mites and ticks. The organism that serves as the home for the parasite is known as the "host." The transmitting agent that carries the infecting pathogen is called a "vector."

The human being becomes a host through one of four pathways:

- The first is infected food or water (sources of roundworm, amoeba, and giardia);
- The second is via a vector, such as a mosquito (carrier of dog heartworm, filaria, and malaria), a flea (carrier of dog tapeworm), the common housefly (transmits amebic cysts), and the sand fly (carrier of leishmaniasis);
- The third is from sexual contact (infected partners can transmit trichomonas, giardia, and amoeba);
- The fourth is through the nose and skin (pinworm eggs and Toxoplasma gondii can be inhaled from contaminated dust; hookworms, schistosomes, and strongyloides can penetrate exposed skin or bare feet). The airplane can be considered another parasitic pathway or vector in its own right because extensive foreign travel has exposed people to a whole gamut of exotic diseases never before encountered in their homeland. (For in depth study of types of parasites, refer to reference at the end).

It is important to identify the parasite, size, site in host, portal of entry, source of infection, most common symptoms, laboratory diagnosis, therapeutic agents to see that practically every part of the human body can be affected by parasites. Most invaders inhabit the gastrointestinal tract (mainly the small intestine, but also the colon), with the circulatory system (blood and lymph) following close behind. During the adolescent or larva stages of their migratory life cycle, many organisms can invade the lungs. And organs like the heart, liver, spleen, eyes, and brain are not immune from the damaging effects.

While many of our unexpected visitors may be invisible, their symptoms can be very apparent. In this situation, the old adage" out of sight, out of mind" definitely does not apply. The warning signs for parasites are also symptoms of other common illnesses. For this reason, parasitic infections are often misdiagnosed and ensuing treatment does not result in the alleviation of symptoms or disease. When symptoms continue even after a course of treatment, parasite screening procedures should be initiated. The

following are warning signs for parasites: constipation, diarrhea, gas and bloating, irritable bowel syndrome, joint and muscle aches and pains, anemia, allergy, skin conditions, granulomas, nervousness, sleep disturbances, teeth grinding, chronic fatigue, and immune dysfunction.

Basically, parasites create damage to the host's body in six ways:

1. They destroy cells in the body faster than cells can be regenerated, thereby creating an imbalance that results in ulceration, perforation, or anemia.
2. They produce toxic substances that are harmful to the body. In cases of chronic infection, the body's immune response can be pushed into overdrive, producing elevated levels of eosinophils. Eosinophils are specialized white cells that normally combat any microscopic pathogen, but when their level is elevated, they themselves can cause tissue damage that results in pain and inflammation. The presence of parasites irritates the tissues of the body, inducing an inflammatory reaction on the part of the host.
3. Some parasites invade the body by penetrating the skin, producing dermatitis. During their develop-mental stage, other parasites perforate and damage the intestinal lining.
4. The size and/or weight of the parasitic cysts, particularly if they are located in the brain, spinal cord, eye, heart, or bones, produces pressure effects on these organs. Obstruction, particularly of the intestine and pancreatic and bile ducts, can also occur.
5. The presence of parasites depresses immune system functioning while activating the immune response. This can eventually lead to immune system exhaustion.

Not every case of ill health can be blamed on parasites. But if symptoms persist and reoccur at regular intervals after a person has been treated for some other diagnosed ailment, then parasites should be suspected. It is a good idea to keep track of the symptoms and look into the parasite connection with the assistance of an experienced health-care provider.

WATER AND FOOD CONNECTION

Food and water are the most common sources of parasite-based illness. Since most of us eat three times a day and drink water frequently throughout the day, our exposure to these sources is constant. Tap water has been found to be contaminated with parasitic organisms. Both plant and animal foods carry parasites, and cleaning and cooking methods often

don't destroy them before ingestion. Today, because of environmental pollution, we all must pay careful attention to the purity of our water and the cleanliness of our food.

THE WATER CONNECTION

In infested waters, mosquitoes and flies can pick up eggs and cysts and transmit them to humans. Sewage sites are also prime parasite reservoirs. Scuba divers and recreational swimmers need to be concerned about the parasite population in freshwater lakes, ponds, and rivers. Divers can become infected with giardia and Entamoeba histolytica. In 1983, the scuba divers of New York City who work for the police and fire department had a 22 percent incidence of protozoan infection, probably from the polluted Hudson and East rivers, where more than 188 million gallon of sewage is dumped on a daily basis!

Water is a main avenue for the spread of giardiasis in this country and abroad. For the past several years, the Centers for Disease Control has reported that the giardic organism is the most prevalent cause of water-borne disease in America. According to the Environmental Protection Agency, outbreaks in treated municipal water are doubling every five years. Giardiasis symptoms include diarrhea, bloating, foul gas, nausea, cramping, and intestinal irritation. Symptoms may last for several weeks to months and can even linger on in periodic episodes for years. The exact number of cases in this country remain unknown, since reporting is not required. Because of the number of ignored or misdiagnosed conditions (giardasis is diagnosed as irritable bowel syndrome and chronic fatigue), many researchers suspect the true number of giardiasis cases is astronomical.

Estimates are that 90 percent of the documented case of water-borne giardia are coming from surface water that has become contaminated by wild animal feces, such as feces from beaver, muskrat, bear, possum, and raccoon. few giardia cases have been connected to contaminate water from shallow wells. Giardia used to be referred as "Beaver Fever," as it was once thought the beaver was the only animal that harbored the cyst. Breakdowns in municipal water systems, particularly in the more mountain areas of this country, are a major cause of the rise of giardia in America today. Many of these water supplies are supported by reservoirs that rely on back country streams and lakes.

Giardia

With the increasing development of recreational areas along reservoirs that supply public drinking water, the problem may be growing. People who are infected and use these recreational facilities for boating, fishing, or swimming might further contaminate what comes out of our faucets.

Giardia is a tiny organism. About 8,000 trophozoites can fit on the head of a pin. Without a microscope, a person cannot tell if water is infected. No matter how pristine the water source may seem, isolated and remote streams, rivers, and lakes can become contaminated with I animal waste. Therefore, all hikers, campers, bikers, hunters, and swimmers should always refrain from drinking wilderness water unless it is properly treated.

Giardia cysts are very hearty and can exist up to three months in cold or tepid water. They are not always killed by chlorination, the most common chemical treatment used for water purification in municipal water supplies. They can be destroyed by iodine-based compounds. However, if the water temperature is close to freezing or contains a great deal of organic material, the amount of iodine necessary to inactivate the cysts makes the water unpalatable. Two commercially available water purification products that are iodine-based and designed for travelers, backpackers, hikers, and campers are Globaline and Polar Pure. Iodine has additional drawbacks. It can cause accidental poisoning and may be contraindicated in sensitive or allergic individuals.

It seems that boiling and filtration are the only surefire ways to kill giardia. At sea level, the water must be brought to a rolling boil and maintained there for at least ten minutes. At higher elevations, boil an additional five minutes. A rolling boil will also kill other protozoans and bacteria. Possibly the most reliable method of purification is through a mechanical filter. The filter must be fine enough to filter out the giardia cyst. The filter size should be no greater than 3 microns (a micron equals one millionth of a meter) because the giardia cyst is approximately 5 microns in size.

It is important to realize that giardiasis can also occur by eating vegetables or fruits that have been washed with contaminated water. Unpeeled or uncooked vegetables and fruit. Unpeeled or uncooked vegetables and fruit should be avoided in areas where giardia is suspect. This precaution, which is generally given to travelers abroad, needs to be observed here in

the United States because of the increasing prevalence of outbreaks of giardia.

DETECTING PARASITES

This questionnaire can help you, along with your doctor, to assess your parasite risk. This basic questionnaire may trace the sources of infection and pinpoint exactly how, when, and where you may have acquired parasites. Connecting the dates of symptom onset to a trip overseas or a new. family pet can provide substantial clues for further health investigation.

Naturally, the more items you check off in this questionnaire, the greater the chances are that your health problems are parasite-connected. But remember, it may take only one exposure to tainted food, water, or the bite of an infected mosquito for infection to take place if your resistance is low. Please answer the questions thoughtfully: "The life you save may be your own."

TRAVEL

☐ Have you ever been to Mexico, Africa, Israel, China, Russia, Asia, Europe, or to Central or South America?
☐ Have you traveled to Hawaii, the Caribbean, the Bahamas, or other tropical islands?
☐ Do you frequently swim in freshwater lakes, streams, or ponds while abroad?
☐ Did you serve overseas while in the military?
☐ Were you a prisoner of war in World War II, Korea, or Vietnam?
☐ Have you had intestinal problems, unexplained fever, night sweats, or an elevated white blood count during or since traveling abroad?

WATER

☐ Is your water supply from a mountainous area?
☐ Do you drink untested well water?
☐ Have you ever drunk water from lakes, streams, or rivers on hiking or camping trips without first boiling or filtering it?
☐ Do you use plain tap water to clean your contact lenses?
☐ Do you use regular tap water that is unfiltered for colonics or enemas?
☐ Can you trace the onset of symptoms (intermittent constipation and diarrhea, night sweats, muscle aches and pains, unexplained eye ulcers) to any of the above?

FOOD

☐ Do you regularly eat unpeeled raw fruits and raw vegetables in salads?
☐ Do you frequently eat at sushi bars or salad bars; in delicatessens; vegetarian, Mexican, fish, Indian, Armenian, Greek, Pakistani, Ethiopian, Filipino, Korean, Japanese, Chinese, or Thai restaurants; fast-food restaurants; or steak houses?
☐ Do you use a microwave oven for cooking (as opposed to reheating) pork, fish, or beef?
☐ Do you prefer fish or meat that is undercooked, i.e., rare or medium rare?
☐ Do you frequently eat hot dogs made from pork?
☐ Do you eat smoked or pickled foods, i.e., sausage, lox, herring?
☐ Do you enjoy raw fish dishes like sushi and sashimi, Latin American ceviche, or Dutch green herring?
☐ Do you enjoy raw meat dishes like Italian carpaccio, steak tartare, or Middle Eastern kibbe?
☐ At home, do you use the same cutting board for chicken, fish, and meat as you do for vegetables?
☐ Do you prepare sushi or sashimi dishes at home?
☐ Do you prepare gefilte fish at home?
☐ Can you trace the onset of symptoms (weight loss, anemia, bloating, distended belly) to any of the above?

PETS

☐ Have you gotten a puppy recently?
☐ Have you lived with, or do you currently live with, or - frequently handle pets?
☐ Do you forget to wash your hands after petting or cleaning up after your animals, and before eating?
☐ Does your pet sleep with you in your bed?
☐ Do your pets eat out of your plates?
☐ Do you clean your cat's litter box?
☐ Do you keep your pets in your yard where children play?
☐ Can you trace the onset of your symptoms (abdominal pain, high white blood count, distended belly in children, unexplained fever) to any of the above?

WORK PLACE

☐ Do you work in a hospital?
☐ Do you work in a pet shop, zoo, experimental laboratory, or veterinary clinic?
☐ Do you work with or around animals? Do you work in a day-care center?
☐ Do you garden or work in a yard to which cats and dogs have access?
☐ Do you work in sanitation?
☐ Can you trace the onset of symptoms (gastrointestinal disorders) to any of the above?

SEXUAL PRACTICES

☐ Do you engage in oral sex?
☐ Do you practice anal intercourse without the use of a condom?
☐ Have you had sexual relations with a foreign-born individual?
☐ Can you trace the onset of symptoms (persistent reproductive organ problems) to any of the above?

MAJOR SYMPTOMS

Please note that although some or all of these major symptoms can occur in any adult, child, or infant with parasite-based illness, these symptoms might instead be occurring as a result of one of many other illnesses.

Adults

☐ Do you have a bluish cast around your lips?
☐ Is your abdomen distended no matter what you eat?
☐ Are there dark circles around or under the eyes?
☐ Do you have a history of allergy?
☐ Do you suffer from intermittent diarrhea and constipation, intermittent loose and hard stools, or chronic constipation?
☐ Do you have persistent acne, anorexia, anemia, open ileocecal valve, skin eruptions, PMS, bad breath, itching, pale skin, chronic fatigue, food intolerances, sinus congestion, difficulty in breathing, edema, bloody stools, ringing of the ears, anal itching, puffy eyes, palpitations, vague abdominal discomfort, or vertigo?
☐ Do you grind your teeth?
☐ Are you experiencing weight loss or weight gain, loss of appetite, insomnia, depression, moodiness, sugar craving, lethargy, or disorientation?

Children

☐ Does your child have dark circles under his eyes?
☐ Is your child hyperactive?
☐ Has your child been diagnosed with "failure to thrive"?
☐ Does your child grind or clench his teeth at night?
☐ Does your child constantly pick his nose or scratch his behind?
☐ Does your child have a habit of eating dirt?
☐ Does your child wet the bed?
☐ Is your child often restless at night?
☐ Does your child cry often or for no reason?
☐ Does your child tear his hair out?
☐ Does your child have a limp that orthopedic treatment has not helped?
☐ Does your child have a brassy staccato-type cough?
☐ Does your child have convulsions or an abnormal electroencephalogram (EEG)?
☐ Does your child have recurring headaches?
☐ Is your child unusually sensitive to light and prone to eyelid twitching, blinking frequently, or squinting?
☐ Does your child have unusual tendencies to bleed in the gums, the rectum, or the nose?

Infants

☐ Does your baby have severe intermittent colic?
☐ Does your baby persistently bang his head against the crib?
☐ Is your baby a chronic crier?
☐ Does your baby show a blotchy rash around the perianal area?

If you answered "yes" to more than forty items, you are at high risk for parasitic infection. If you answered "yes" to thirty items, your risk for parasitic infection is moderate. If you answered "yes" to twenty items, you are at risk. If you are not exhibiting any overt symptoms now, remember that many parasitic infections can be dormant and then spring to life when you least expect them. Be aware that symptoms that come and go may still point to an underlying parasitic infection because of reproductive cycles. The various developmental stages of parasites often produce a variety of metabolic toxins and mechanical irritations in several areas of the body - for example, pinworms can stimulate asthmatic attacks because of their movement into the upper respiratory tract.

DIAGNOSIS

The first step in diagnosing parasites is your physician's suspicion or your concern that parasites may be the root cause of your health problems his requires a basic understanding of the geographic distribution, methods of transmission, symptomology and life cycle of parasites. Clinical manifestations related to parasites include eosinophilia (an increase in the number of a certain kind of white blood cell), dysentery, diarrhea, itching, enlarged organs, anemia, and muscular aches and pains. A comprehensive travel, dietary, and lifestyle history is an essential diagnostic tool. The parasite questionnaire provided above can help you or our physician assess your parasite risk.

CLINICAL TEST FOR PARASITES

There are many ways to test for parasites. The most accurate tests available in laboratories, today are:

- Purged stool test
- Bueno-Parish Test
- String Test
- Blood Tests
- Sputum Tests
- Urine Tests
- Tissue Scrapings and Swabs
- Radiologic Tests
- Aspiration
- Biopsy
- Cultures
- Prenatal Tests

TREATMENT

Treatment for parasitic infection is not a "do-it- yourself" project. During treatment, many individuals experience detoxification symptoms on their road back to health. Nausea, gastrointestinal discomfort, and frequent trips to the bathroom are not uncommon. You want to be in good hands while going through this sometimes puzzling and uncomfortable process.

The question of whether to treat an asymptomatic carrier is often discussed in the medical literature. An asymptomatic carrier is an individual who is not exhibiting noticeable symptoms but is still a carrier of a parasitic infection, which could be passed on to others. Practically all researchers agree that the asymptomatic carrier should be treated because of the potential of

infecting others. This is particularly important with infected children and food handlers. In some cases of parasite-based disease, the medication used to treat symptomatic individuals is not effective in the asymptomatic cyst carrier. Appropriate alternative drugs must then be utilized.

It is also believed that if one member of a family is infected, the entire family should be treated. People who live together can infect one another when making food for each other or sharing bathroom facilities. So it is a good idea to treat all household members as a matter of course.

GENERAL OBJECTIVES OF TREATMENT

Treatment of parasitic infection must be geared to eradicating the parasites, rather than relieving the symptoms of infection. If the parasites are not eradicated, the infection will continue to cause untold damage to the system. Given a proper environment, a parasite colony can flourish to sometimes fatal proportions. And so there are some symptoms of infection that should be alleviated promptly to protect the host. Parasite-induced diarrhea from amoeba, cryptosporidium, or giardia needs to be treated immediately to prevent dehydration. In immuno compromised individuals (such as those with AIDS), diarrhea can lead to severe dehydration and even death.

TREATMENT PROTOCOL

The best treatment protocol for the most commonly occurring intestinal parasites -roundworm, pinworm, and tapeworm- entails the following five steps, which should be carried out in conjunction with an experienced health-care practitioner who can guide you through the recovery process:

1. Cleansing the intestinal tract.
2. Modifying the diet.
3. Administering effective substances to eliminate the parasites.
4. Recolonizing the gastrointestinal tract with friendly bacteria.
5. Eliminating parasite risk factors from the lifestyle and environment to avoid reinfection.

Success in treatment is predicated on a number of factors. To begin with, the length of time the patient has been infected and his basic overall health are keys in determining the length of time necessary to achieve successful results. Oftentimes, repeated treatments are required for complete success, especially if the infection is of a long-standing nature. Patient cooperation, as with treatment for any illness, is crucial.

PREVENTION

Since parasites are difficult to find and often more difficult to treat, the best solution is to prevent them in the first place. Since some of them, like giardia, are fast becoming a fact of life, we will have to learn to live with them by strengthening our resistance to them. Parasites are opportunistic critters. Any flaw or weakness in our defense system is an open invitation to invasion.

Our best line of defense against parasitic infection is a strong, healthy immune system. But our immune systems have taken a beating in the past few decades. Every year, 2.6 billion pounds of pesticides are used in the United States, mostly on food crops. The food we eat, instead of nourishing our bodies, challenges our immune systems with residues from these pesticides. Unless we take the time and care involved to clean our fresh fruits and vegetables as outlined later in this chapter, these very healthful foods can be the vehicle by which parasites enter our bodies, along with chemical and pesticide residues.

The ground water supplies in over half the states in this country have been contaminated with pesticides from run-off. Many municipal water supplies are antiquated and have become breeding grounds of giardia, bacteria, viruses, lead, and other contaminants. Even the air we breathe contains pollutants that challenge our immune systems. Each challenge to the immune system stimulates it into action. Parasites, as foreign invaders, also activate the immune response. As the parasites continue their invasion unchecked, the damage they cause to the body's vital systems, including the gastrointestinal and nervous systems, creates further stress on an already weakened immune system.

This continual assault and damage eventually leads to immune system exhaustion. Supporting our immune systems with foods rich in vitamins C, E, and beta-carotene and the minerals zinc and selenium is a good first line of defense against parasitic infection. Additional supplementation with these vitamins and minerals and with herbs like echinacea, ginseng, and astragalus is good insurance for a healthy immune system. These vitamins, minerals, and herbs have been shown in numerous studies to enhance and support immunity. Since most parasites enter the body orally, one of the body's best defenses against them is our stomach acid. Very few pathogenic microorganisms can survive the hydrochloric acid in a healthy

stomach. However, numerous factors lead to a lack of hydrochloric acid in the body:

- An overgrowth of Candida albicans can damage the cells that produce hydrochloric acid. A course of antibiotics can often result in an overgrowth of Candida albicans, leaving one of our body's best defenses against para- sites severely weakened.
- Recent research has shown that people with type A blood have a genetic predisposition to a condition known as achlorhydria, whereby the body does not produce enough hydrochloric acid.
- Lead, one of the more toxic heavy metals widely distributed in our environment, binds the hydrochloric acid in our stomachs, making it unavailable for digestion.

Like the prevention of other major health problems, the prevention of parasitic infections must begin with the awareness that we are all at risk, even if we never travel outside the United States. By following the guidelines in regard to personal and household hygiene, travel, sexual practices, food and water, day-care and school sanitation, household pets, and eating out, you can protect yourself and your family. At first they may seem overwhelming to some people. But the good news is that many of the common avenues of transmission are within our control. Armed with the proper information and education regarding our current-day environment, hygiene, sanitation, and food, we can overcome.

PERSONAL HYGIENE

We often overlook the importance of personal hygiene. Here's a reminder.

- Always wash your hands prior to eating.
- Make sure to wash your hands with soap and water after going to the bathroom, changing the baby's diaper, or handling your pets.
- Be sure to keep fingernails short and scrub under them. (A nail brush kept in the bathroom is a good idea.)
- Don't sit on a bare toilet seat without first wiping it or protecting it with toilet paper. Better still, squat. Pin- worm eggs and trichomonas can lurk under toilet seats. Trichomonas can also be spread through mud baths, water baths, and sauna benches.
- Don't use tap water to clean contact lenses. Distilled water can also be contaminated, so buy sterilized lens preparations for all cleansing and disinfecting purposes. Make sure to remove contact lenses before swimming.
- Don't walk barefoot, especially in warm, moist, sandy soil.

- If you travel frequently, eat out on a regular basis, have pets, or live in a mountainous region of the country, have a complete parasite examination at least twice a year. The most accurate diagnosis comes from a combination of purged stool and rectal mucous exam.

INFANT AND CHILD CARE

Healthful habits should be practiced and taught at the earliest stages of childhood.

- Breast-feed your baby as long as you can. Human milk has anti-protozoan properties, which provide antibodies that fight against amoeba and giardia.
- Keep toddlers away from puppies and kittens that have not been regularly dewormed.
- Be sure your child routinely washes after contact with household pets. With infants, the task is your responsibility.
- It's a good idea to prevent toddlers from kissing household pets or being licked by them.
- Do not allow children to eat dirt.
- Do not allow children to play in yards, playgrounds, or sandboxes in which animals are allowed to roam loose.
- Clean children's bedrooms with a damp mop or vacuum to avoid stirring up possibly infested dust.
- Sanitize all toilet seats and bowls, but particularly those used by children, with a mild Clorox solution. Clean the under surface of the seat.
- Clean children's toys with mild, soapy water.
- Keep children's fingernails short and clean.

Procedures for an Infected Child

Children who have pinworms should follow these additional preventive measures to avoid the spread and re-infection among other family members. These tips come from Dr. Leo Litter, M.D., pediatrician in West Hartford Connecticut.

- Bathe daily.
- Use one washcloth and towel for the face and hands, another for baths.
- Scrub hands thoroughly after bathroom use and before each meal.
- Wear close-fitting underpants at all times (under sleeping garments, too).
- Do not share a bed.

Procedures for an Infected Child's Caregivers
Mom and Dad can help by instituting these additional measures:

- Launder bed clothing and personal clothing of the infected person daily.
- Keep toothbrushes in containers (thus avoiding exposure to bathroom dust that transmits pinworms).
- Scrub toilet seats daily.
- Clean and vacuum daily (to remove eggs along with the dirt).
- Keep all rooms-bedrooms, especially-well aired. . As frequently as practical, superheat the home to 95°F for a day. Dr. Litter suggests this is the most effective way to kill embryos in the eggs. He suggests the children's room be heated to 95°F for just a day, preferably on a weekend when the family members are out.

CONCLUSION
Protecting you and your family from parasites involves a multifaceted approach. Old-fashioned common sense coupled with a heightened awareness and understanding of the methods of transmission and sources of potential infection are key factors in prevention. Our bodies are bombarded on a daily basis with a multitude of disease-producing bacteria, viruses, and allergens. The body's natural defender, our immune system, prevents us from "catching" germs and becoming host to every passing microbe.

Parasites cannot infect a healthy body if the environment is not conducive to them. Andreas Marx, a doctor of oriental medicine, said it best when he linked disease to "an imbalance of the body's terrain (pH, oxidation factor, and mineral balance)." We can stay healthy by nourishing our bodies with healthy food; supplementing our diets with immune-enhancing vitamins, minerals, and herbs; and by eliminating parasite risk factors from our environment.

But there is no need to become paranoid. We just need to become more responsible and conscious of a problem that many of us are not aware even exists. Parasites can only persist when they have a suitable environment. Diets high in sugars, refined carbohydrates, and fiber-depleted processed foods, and immune systems that have been weakened by these diets and by other environmental consequences of modem-day

living, provide the ideal feeding ground for parasites. The problem is not so much "out there" as it is within our bodies.

REFERENCE: Excerpts taken from this book for educational purposes only. Gittleman Louise, GUESS WHAT CAME TO DINNER, Avery Publishing Group Inc., New York, 1993