

## Chapter 9: The Research about Longevity

It was almost a month later when Dr. Jalali informed everyone about the next meeting on Friday evening at his residence. The group had come together to resume the discussion. After a brief introduction and some refreshments the session was formally opened by Mr. Hoshyar, who informed the gathering about the letter he had received from Dr. Nafisi. He asked Dr. Jalali to read it aloud. Dr. Jalali agreed and read the letter:

Dear Mr. Hoshyar:

Thanks for your letter and your invitation to speak to your group about my research on longevity. Since I am too busy to accept any speaking engagement and since the subject is very dear to me, I thought I would respond to your questions in writing, however brief, for the benefit of your colleagues. I hope that my responses will be satisfactory.

Is There Any Fixed Term for Human Age?

Mr. Hoshyar: Is there any term fixed for human age in medical science or biology beyond which any transgression is impossible?

Dr. Nafisi: There is no such age fixed for human life the transgression of which would be impossible. However, ordinarily the longest period for human life is a little less than a hundred years. It appears that in the recorded history of humankind this period has remained without any considerable change.

Nevertheless, average age differs, depending upon the region, climate, race, heredity and life style, and has varied at different times in each historical period. Hence, in comparison to other periods, in the last century the average life span has varied considerably. For example, between the years 1838 and 1854 in England the average age of a man was 39.91 and of a woman 41.85 years. But in the year 1937 this average had increased to 60.18 and 64.4 years respectively.

In the United States the average age for a man in 1901 was 48.23 and for a woman 51.8 years. On the other hand, in 1944 it was 63.5 and 68.95 years respectively. This increase is clearly the result of a better survival age for infants as a result of improved health care and preventive medicine, more

particularly immunization against infectious disease. However, cures related to the diseases of old age have not had much success.

Mr. Hoshyar: Is there a general rule or standard to determine the life span of living beings?

Dr. Nafisi: The widespread belief is that there is a direct correlation between the size of a body and its life span. For example, it is worth observing the difference between the short age of a moth or a fly and that of a turtle, which might live as long as two centuries. However, this correlation is not as constant as it might seem, because a parrot or a crow, more often than not, live longer than birds that are bigger in size, and even longer than the majority of the mammals. Some fish, like salmon, live up to a hundred years; whereas a horse does not live more than thirty years.

From the time of Aristotle, there has been a belief that the life span of each being is in accord with the time it takes to grow. This equation for animals, as estimated by some scholars, was eight times the period that was required for a species to mature, whereas others maintained it to be five times that period. For human beings, one hundred years is regarded as a normal span. This opinion is widely held even now. However, David, the Prophet, has regarded seventy years as a natural age.

In those ancient periods several individuals are believed to have lived for over a hundred years. However, their identity and the actual scale of their life may not be as accurate as it seems. Among these individuals are Henry Jenkins, who died in December 1670 at the alleged age of 169 years; Thomas Parr, who died in November 1635 at the alleged age of 152 years; and Catherine, countess of Desmond, who died in 1604 at the alleged age of 140 years<sup>1</sup>. Some other names appear in different journals across the world today.

## **The Reasons for Longevity**

Mr. Hoshyar: What are the factors that lead to longevity?

Dr. Nafisi: The following have been considered as probable factors of longevity.

(1) Heredity: The significance and the influence of heredity in longevity are self-evident. There are families whose members have been observed to live longer than the average human life expectancy, except in cases where death occurs because of an accident.

In this connection it is relevant to mention the research done by Raymond Peril. In a book that he co-authored with his daughter, he studied a family that had a record of longevity going back seven generations. The total number of years going back seven generations in that family was 699 years, including two persons who were killed in an accident. In addition, in more recent statistics conducted by insurance companies it has been proven that longevity in the progenitor has a direct influence on longevity in the progeny.

The heredity factor can be neutralized by other factors such as environment and bad habits. However, heredity can explain the reason why certain individuals living under unfavorable circumstances, such as alcoholics, can live longer. An offspring inherits strong and healthy body parts and organs from parents, including the nervous system and blood circulation. The famous proverb, "The age of a person can be gauged from the shape of his arteries," is based upon recognition of this heredity factor. In other words, for a number of people, when they reach their old age, their arteries become blocked because of hereditary traits. Moreover, the majority of the people who die before the age of ninety because of a heart attack or stroke have been found to suffer from arteriosclerosis.

(2) Environment: This is the second most important factor in longevity. The environment that offers moderate climate and clean air, is free of harmful microbes and poisons, and contains safe and peaceful living conditions has a bearing upon the well being and longevity of its inhabitants.

(3) Profession: The type of work and the working conditions as well as the duration in hours, in addition to spiritual and psychological activities, have an impact upon longevity. It appears that when a person enjoys good physical health and mental tranquility, it affects their life span significantly. On the other hand, a stressful life accompanied by a lack of physical respite and mental peace, even more so than hard physical and psychological labor, reduces life span. It is for this reason that there are more persons enjoying longevity among religious scholars and prime ministers than among ordinary people. This longevity is directly related to their style of working and managing their stress under the constant pressure that is exerted by their profession. It is for this reason that joblessness and early retirement at a younger age might actually lead to the shortening of one's life span.

(4) Nutrition: The kinds of food and the amount we consume have an impact upon our life span. The majority of the people whose life span exceeded more than a hundred years have been found to be dieters. There are numerous proverbs that signify the harm caused by overeating. Among these are: "A person digs his grave with his own teeth." To be sure, overeating requires the entire body to work harder and is a cause of digestive disorders, heart and kidney diseases, and other ailments.

Unfortunately, these overeaters enjoy enormous energy by which they are deceived until symptoms of disorders begin to surface. During World War I, it was observed that death as a result of diabetes had significantly declined in some countries. The main reason was the shortage of food in those areas. Hence, it appears that poverty as a cause of reduced intake of food is a blessing in disguise. Moreover, consumption of large amounts of meat after the age of forty is extremely harmful.

Dr. McCay's experiments on mice at Cornell University have demonstrated that thin mice were able to overcome fat ones. A mouse reaches physical maturity at the age of four months; becomes old at two years, and dies before three. Dr. McCay's experiments involved keeping a group of mice under a strict low calorie diet that was enriched with vitamins and minerals. After some time he came to this conclusion: The period of their physical maturity could be prolonged to a thousand days instead of four months.

Further, he observed that the oldest mice who were fed on a regular diet died after 965 days. But the mice who were kept under strict diet remained young and full of energy for a longer than usual time. In relative comparison to a human life span, this latter group had lived a life of a hundred or a hundred and fifty years. More importantly, this group remained healthier, suffering no ailments, and smarter than those who were on a regular diet. Such experiments have been conducted on fish and amphibians with similar results.

It is important to bear in mind that just as overeating can become a cause for a shorter life span, poor eating can lead to a surge in illness and a shortening of life span. That is, dieting must be accompanied with proper nourishment, otherwise it could lead to one being afflicted with diseases.

## **Senility and Its Causes**

Mr. Hoshyar: What is the meaning of 'senility' or 'getting old'?

Dr. Nafisi: 'Senility' is marked by the wear and tear on human organs like the heart, stomach, brain, and internal glands which can no longer perform their functions to their capacity, mainly because they are unable to renew their cells and increase the excretions they need to refurbish themselves. This leads to the infirmity and weakness that become apparent in the human body at this stage.

Mr. Hoshyar: What causes senility?

Dr. Nafisi: The signs of old age begin to appear at a certain stage in human life. However, it is not certain that senility is defined by the passage of time and by specific signs in the parts of the body such that one could assert that when a person has lived a number of years he has reached an old age. It is more correct to maintain that the main reason for senility and its manifestation is the onset in of the disturbance of a equilibrium at this age. As such, the main reason for senility is not the passage of time; rather, it is a deficiency that appears in the proper functioning of the body parts.

At this age, different bodily functions slow down, and anatomically the tissues become smaller and their blood supply decreases. Digestive and alimental systems become weaker since they are unable to perform their function to the full. This causes an overall weakening of the body. The procreative power becomes less, and the brain slows down. In most people memory power reduces, especially recollection of names or dates becomes difficult. Nonetheless, it is quite possible that while physical functions are reduced, spiritual powers are augmented.

It is important to remember that all these occurrences and weaknesses that set in at a given stage in life are the result of a disturbance of the equilibrium that has occurred. Hence, it is more accurate to say that senility is not the cause; it is the effect. In other words, if a person is found who, despite an advanced age, does not experience any deficiency or loss of equilibrium, then he might continue to live much longer with a healthy body and mind. The Opposite has been observed too whereby despite a young age, a person might lose vitality and become old before the age that is ordinarily regarded as senile.

Mr. Hoshyar: What causes the balancing system of the body to become weak and lethargic?

Dr. Nafisi: The body's organs from the time of the birth of each person possess the ability to perform their naturally endowed function. This ability in the organs, as we have mentioned earlier in our discussion about the elements that impact upon longevity, is very much affected by the physical constitution of the parents and the kind of nutrition, environment, and climate to which they are exposed. Following that, it appears that as long as no deficiency sets in they will continue to provide their natural function as long as a person lives. But, if a deficiency affects one or any of them resulting in the reduction of its normal workload, then senility with all its signs peeps through and old age becomes manifest.

In short, the human body is continuously assailed by different kinds of viruses, bacteria, and microorganisms that endlessly attack it, producing toxic substances inside the body which destroy the healthy cells, thereby obstructing the continuation of life. When these things happen, on the one hand, the human body has a greater responsibility for providing the necessary nutrients for its survival and, on the other, it has to put up a defence against the attack of the microorganisms that cause infirmity in it. Moreover, the body has to restore the healthy state of those organs that were assaulted and get rid of excessive toxic matter in the blood stream while sending help to the infirmed organs.

However, as soon as one enemy is brought under control it is faced with another attack, and so on. Hence, the internal defence system of the body has to remain alert all the time. In order to equip itself with its defenses, the body has to seek help from outside. Unfortunately, humans do not have sufficient knowledge about their own physical constitution and their internal needs. Moreover, in this sacred battle of self preservation, not only do human beings not cooperate with their body, but because of their ignorance and short-sightedness they actually end up assisting its enemy by eating the wrong foods and, as a consequence, open the doors to reducing their health and life span. Evidently, when the body is unable to furnish the necessary tissues, it loses the ability to perform vital functions when attacked by merciless microorganisms. Under these conditions the human body begins to decline and the signs of infirmity become manifest.

Just as the human body becomes tied to the destiny of being senile under the impact of hard work, it also becomes the victim of senility as a consequence of the extremely stressful episodes in life. Some scientists believe that untimely senility is caused by some diseases or harmful habits. According to the findings of some research, the toxic secretions that are produced by the fermentation of intestinal microbes could be the cause of senility; hence, if these microbes are exterminated age could be prolonged.

The basis for such a conclusion is provided by the empirical data collected in the Balkans, more particularly in Bulgaria, Turkey, and the Caucasus. In these areas, a greater number of people live for over a hundred years. The reason for this longevity has been sought in yoghurt which is consumed in large amounts by these peoples. Scientists believe that since yoghurt possesses lactic acid that kills the

microbes in the intestine, the person consuming it is able to live longer.

However, it is evident that the secret of longevity in these peoples living in the mountain regions of the Balkan countries could not be simply attributed to their diet. Rather, it is also to be sought in the climate, their peaceful but hard working life style, and in their inherited genetic composition. All these factors, more or less, have contributed to their long life. Longevity has been observed in other cases of people living in mountainous regions of the world.

Mr. Hoshyar: Is the cause of death and of the termination of the bodily functions, that same longevity and the immense toil that it involves? In other words, is death a necessity and certainty in old age because of longevity and toil, even if the main reason for death might be something else?

Dr. Nafisi: The main reason for death is the occurrence of deficiencies which set in all the main organs of a body. As long as those deficiencies do not occur, death does not result. In fact, if the weaknesses occur before old age, then even a young person dies. But if he remains immune from these death-causing symptoms, then ordinarily as determined by the natural course of life, these symptoms definitely occur in old age. Having said all this, it is important to keep in mind that if an unusual person is born who lives a long life, but because of his unique physical constitution and other social conditions none of his organs has suffered any deficiency, then his having lived a long life will not necessarily cause him to die.

Mr. Hoshyar: Is it not possible that a human being in the future might be able to discover a medication by means of which he might be able to increase the vitality of his body and prevent it from getting old and physically deficient?

Dr. Nafisi: This is entirely possible. On the basis of the insufficient knowledge that we possess today, we cannot reject such a possibility. Scientists have always conducted and continue to do research about the phenomenon of long life. Hopefully, one day they will discover the secret of longevity and human beings will be able to overcome old age and the short life span.

## **The Long Life of the Twelfth Imam**

Mr. Hoshyar: As you know, the Shi`a believe that the promised Mahdi in the Prophet's hadith is identical with Imam Hasan `Askari's son who was born in the year 255 AH/873 CE or 256 AH/874 CE. He has been alive since that time and continues to be in that state in occultation. Moreover, he may continue to live for centuries in that invisible state. Does the science of medicine regard such a long age strange and impossible?

Dr. Nafisi: The question that has remained a mystery for me, insofar as my information and knowledge of the books that I have read goes, is the secret of the longevity of the Qa'im (may God hasten deliverance through him) from the family of the Prophet (peace be upon him and his progeny). However, with the phenomenal advancement made in natural sciences, and with God's endorsement of such

endeavors, we might see a breakthrough in this regard and those of us who are seeking to understand this mystery might be able to see God's wisdom in this connection.

The only thing I can say at this stage of human knowledge is that one cannot reject such a possibility on the basis of the analogy that since it has not been empirically observed it cannot exist. The reason is that besides the principle of probability, there is a list of things in nature whose long life span is beyond any doubt.

(a) In the world of vegetation, there are species that are known to have long life and are known to be the oldest surviving existents on earth. Among these are the Californian sequoia. These trees are three hundred feet tall and cover one hundred ten feet around the trunk. The life span of some of these trees exceeds five thousand years. It is possible to conjecture that when the Pharaoh began construction of the largest pyramid in Egypt these trees must have been in the early youth of their existence. And at the time of the birth of Jesus (peace be upon him), the skin of the trunk must have been one foot thick. For example, the cross section of one of the trunks of this species which is preserved in the museum of natural history in South Kensington has 1,335 rings, each ring representing one year<sup>2</sup>.

The oldest surviving species, which is some 4,600 years old today, is a kind of pine tree known as *pinus anstata* that grows in central and eastern California. The oldest surviving animal is a turtle on the island of Galapagos that is 177 years old, weighs 450 lbs and measures four feet long<sup>3</sup>.

(b) The archeological diggings that were undertaken in Egypt discovered wheat in the pyramid of Tutan Khamen, which I personally saw and read about in the journals, that was sown in some parts and germinated. Wheat grew in these fields, demonstrating the fact that the germ continued to live for some three to four thousand years.

(c) Viruses can be regarded as the longest living creatures. The virus is a living being that can be studied to reveal the secret of life. These are the creatures responsible for the development of certain diseases in plants, animals, and humans. The common cold, chicken pox, small pox, German measles, are some of these virus-related diseases. In the excavations that were carried out in ancient sites, it has been possible to discover prehistoric viruses and cultivate them in specific areas. In other words, although for all these years these creatures were living a concealed existence and practically were not different from a dead thing, they actually continue to live even after thousands of years<sup>4</sup>.

(d) Recently I read in the newspapers that huge frozen animals were found during excavations in Siberia. After they had been placed in warmer conditions vital signs of life returned.

(e) One of the ways of prolonging the life of a living being and keeping it half alive in order to observe its life is hibernation. This is also known as a state of "winter sleeping." In some animals hibernation continues throughout winter, whereas in others it continues during the summer. When an animal hibernates, its need for food disappears and the wear and tear on the body decreases between 30–100 to. The thermal function of the body comes to a temporary halt. Since the environment is also cold the

hair and skin of the animal does not become stiff and hence it does not shiver.

The temperature of the body becomes like the temperature of the environment, reaching somewhere around 39–41 degrees Fahrenheit, some degrees above the freezing point. Breathing becomes slow and irregular; heart beat becomes random and slow. Different reflexes stop and nerve impulses in the brain cannot be observed under 52–66 degrees F. Some sea animals, including fish, are capable of living under the extremely cold waters for a long time.

Various living cells like human and animal sperm cells can be conserved in cold temperatures for artificial insemination, and red blood cells for transfusion. Moreover, several species of small animals can be frozen and brought back to a living condition with a change in temperature, without causing any harm to them. The study of hibernation could lead to a breakthrough in understanding the secret of longevity and humankind can reach its dream of long life.

All the above observations in the medical and biological sciences make it possible for human beings to expect to discover the secret of longevity and overcome old age one day. Moreover, it has prompted them to continue their research until the goal is reached. There is hope that scientific research into understanding the mystery of longevity will also lead to uncovering the secret of the long life of the Qa'im from the Family of the Prophet (peace be upon him and his progeny).

Let us hope that day will come soon.

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Mr. Hoshyar: During this time when we were waiting to hear from Dr. Abu Turab Nafisi I came across an interesting article, translated from French, on the subject under discussion. I thought I would read it to you so that we can all benefit from this research.

## **The Article by Justin Glace**

Biologists have been able to determine the life span of living creatures from a range of a few hours to hundreds of years. Some insects live only for a day, some others for a year. In each species, however, there are some who have transgressed the limits of an ordinary life span and have lived twice or thrice the normal age of their kind. In Germany, there is a rose tree that, compared to its own kind, has survived for hundreds of years. Similarly in Mexico there is a pine tree that is two thousand years old. Some alligators have been found to have lived for one thousand and seven hundred years.

In 17th century London, there was a man by the name of Thomas Parr whose age had reached one hundred and fifty two years. In contemporary Iran there is a man by the name of Sayyid 'Ali whose age is one hundred and ninety five years, and his son has lived one hundred and twenty years. In Russia, a

man called Louis Poof Pujak is one hundred and twenty years old. A Caucasian by the name of Mikokho Polov is one hundred and forty one years old.

Biologists think that some internal factors are the cause of the unusually long life spans. These factors have resulted in the prolongation of the life span. Century old individuals are the favorite offspring of nature. The chemical composition of their bodies is perfectly in agreement and in accordance with the desirable perfection.

According to the biological theory, the natural life span of each species should be seven to fourteen times their growth period. Hence, for instance, since the growth period of a human being is twenty five years, his natural age should be in the vicinity of two hundred and eighty years.

By adopting a balanced diet also, one can disturb the order of nature. The proof for this assertion is provided by a honey bee whose life span is only four to five months. On the other hand, the queen bee, who is born from an egg and a larva like others, because of her special kind of diet, lives for some eight years.

Ostensibly, the matter is not that simple when it comes to human beings. We cannot live in a special place like the queen bee, with the temperature of our dwelling under constant watch to maintain a uniform environment. We are faced by a host of hazards, some of them, according to the biologists, include self poisoning, a lack of vitamins, and arteriosclerosis.

According to one of the experts in London, the disturbance of the equilibrium and the increase in the supply of one of the following in the body may hasten death: iron, aluminum, magnesium, and potassium. What is amazing is the fact that among all these hazards there is no specific mention of senility, because death is not regarded as having been caused precisely by senility.

A Swedish physician, who is life-long chair of the American Scientific Association of Human Aging, believes that old age is caused because of the entanglement of protein molecules with bodily cells. This condition causes the cells to gradually stop functioning, which in turn causes death. This physician is in search of a matter that can disentangle this condition in order to revive the bodily cells to undertake new tasks and thereby defeat senility. In laboratory experiments, the life of some animals, like an Indian pig, has been prolonged by 46.4 by increasing the dosage of vitamin B6, nucleic, and pantonic acids in their food.

Russian biologist Philatoff is hopeful that he should be able to eliminate old age altogether by utilizing stagnant tissues. These stagnant tissues can be made to function like agricultural fertilizer to revive the human body. Besides, there are certain rules whose observance may lead to the prolongation of life. These rules include dietary and biochemical regulations, relaxation, breathing and other instructions for a healthy life. Some nutritionists are of the opinion that by merely following proper dietary rules, one can extend the life span to more than a century. We are what we eat.

## Research into the Matter of Longevity

There was another article on research on longevity that appeared in an Arabic journal. The following is the translation of that article:

Some reliable scientists have been quoted saying: "Each major organ of an animal body is capable of living for an unlimited period. If human beings do not encounter hazards and accidents then they are capable of living for hundreds of years." This statement given by these scholars is not founded upon speculation; rather, it is based upon prolonged experiments conducted in the laboratories. One of the surgeons successfully preserved a severed part of an animal's body for longer than that animal's life span. On the basis of this he reached the conclusion that the life of the severed part depended upon the nutrients that were prepared for it. As long as it received proper nutrition it was able to continue living.

That surgeon was Dr. Alexis Carl, who was engaged in his research at the Rockefeller Foundation in New York. He had performed this experiment on a severed part of a chicken. The part continued to grow as usual for more than eight years. The team of physicians repeated the experiment on severed parts of a human body, like muscle tissue, heart, skin, and kidney. They observed that as long as the necessary nutrients reached these parts they are able to continue growing and living.

According to the professors of medicine at the Johns Hopkins University, the main organs of the human body are capable of living indefinitely. This fact has been proven through repeated experiments, and, at least, is a preponderant opinion. The reason is that the life of the organs that are under the experiment at this time continues uninterrupted. The thesis then is based on clear evidence and carefully supervised scientific experiments.

Apparently, the first person to embark upon these experiments on the animal organs was Dr. Jack Lobe. He too was engaged in his research at the Rockefeller Foundation. It was while he was studying reproduction in frogs through an unfertilized egg that he suddenly realized that while some eggs live for a long period, others die early. This led him to experiment on the organs of a frog. In this experiment he succeeded in keeping these organs alive for a long period.

Following him, it was Dr. Warren Lewis and his wife who demonstrated that it was possible to preserve a bird's embryo in a saline mixture in such a way that its growth could be revived anytime a part was attached to it. This experiment was conducted repeatedly to ascertain its findings, including the observation that the living cells of an animal can be preserved in a mixture with the necessary nutrients to allow it to continue to grow and live. However, there was no proof to maintain that it could not die.

Dr. Carl was able to prove through persistent research and experimentation that the parts under experiment do not grow old, and live even longer than the animals themselves. He and his colleagues had begun their research in January, 1912 and had faced difficult problems which they overcame to establish the following points in connection with aging:

(a) As long as the living cells under experiment do not face any anomalous condition that could cause

their death, such as a decrease in the level of the nutrients in the mixture or an attack by microbes, they can continue to live eternally.

(b) These organs are not only living, they have the ability to grow and to proliferate.

(c) Their growth and proliferation can be compared and measured in relation to the nutrients that are prepared for them.

(d) The lapse of time has no impact on them. Hence, they do not become weak or old; rather, there are no signs of aging in them. They continue to grow and proliferate the same year after year. It is probably right to maintain that as long as these cells are under the watchful eyes of the scientists, who feed them sufficiently, they will continue to grow and live.

Thus, it is correct to say that old age – senility – is the effect rather than the cause. Then why does man die? Why is his life span limited? Why is it that with the exception of a few individuals who make it to a hundred or more years, most people live only for seventy or eighty years? The answer to these questions is that the bodily organs of an animal are numerous and different. There is a perfect interrelationship and interconnectedness among them.

The life of some depends on the others. If any of them, for some reason, becomes weak or deficient and dies, then the death of the other parts is imminent. It is sufficient to cite a sudden death that occurs because of an attack by microbes. This has also become the main reason that human life has not increased beyond the average of seventy, eighty, or even less. This is also true with respect to infant mortality.

In the final analysis, that which has been proven so far is that the reason for death is not the number of years a person has lived; rather, it is the anomalous conditions that attack the body and render its major organs deficient and incapable of defending it under adverse situations. Consequently, one can say that when medical science becomes capable of subduing these anomalous conditions or bringing them under some kind of control, then there will remain no obstacle for life to continue beyond a number of centuries, as is the case with some trees, for instance. Such a breakthrough in the advancement of medical science does not seem possible within the foreseeable future. Nevertheless, it is not far-fetched to expect that the present average life span may increase to two or three times<sup>6</sup>.

## **Further Research on Longevity**

An English physician has written a detailed article on aging in which he maintains that some scientists have been able to increase the life span of a fruit fly nine hundred times the normal life of others in the same species. This success was due to the fact that they had protected the fly from poisons and other enemies, creating a favorable environment for it<sup>7</sup>.

Engineer Madani: Even I have come across several scientific and interesting articles in which scholars

have discussed their findings about the secrets of long life, and the causes and factors that lead to old age and death; and the ways of combating that. However, since it is already late, we should take up these articles next time.

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The following week the meeting took place at Dr. Fahimi's house. Mr. Hoshyar requested Engineer Madani to share the information he had gathered from his readings on longevity.

Engineer Madani: I would like to present the articles that I read some time ago which should help resolve some of the questions that we have about the possibility of longevity.

## **New Research on Longevity**

According to Professor Metalinkef, an expert on studies about death, the human body is made up of thirty trillion different cells of which not all can die at once. As a consequence, death occurs only when the human brain goes through irreparable chemical changes. On August 3, 1959, Dr. Hans Sealy, a researcher on the subject of death in the city of Montreal, Canada, showed a cellular tissue of an animal to the newsmen and claimed that the tissue was alive and would never die. In other words, the animal cellular tissue never dies and is, technically speaking, eternal. In addition, he claimed that if a human cellular tissue could be brought under the same conditions, human beings could live up to a thousand years.

Theoretically Professor Sealy regards death as a kind of gradual illness. According to him, no one dies of old age because if that were the case then under the impact of old age the entire cellular system of the body should deteriorate. Moreover, all the organs should stop functioning. On the contrary, following death, many cells and parts of the body of an old person are in good shape. In fact, the majority of people die a sudden death because one of the vital organs has stopped functioning. Since bodily parts are interconnected, the collapse of one leads to the failure of the other parts. Professor Sealy announced that one day when medical science has advanced to the point where it can inject new cells into the deficient and worn out organs, it should be able to revive the human body and prolong human life as one desires<sup>8</sup>.

Some scientist have suggested that physiologists should make a distinction between an old age which is the result of natural processes of growth and an old age which occurs prematurely as a consequence of a destructive effect upon the organism, such as poison, diseases and other deficiencies. Further, they maintain that old age must be considered as an infirmity and, accordingly, treated. Human life can be much longer and should move forward. However, it has been caught up in the midstream. As such, it is necessary to take all the possible steps to restore its natural physiological longevity without a decline in its energy and ability to run its natural course<sup>9</sup>.

# Longevity

Following a series of lengthy experiments Professor Sealy and his colleagues have reached the following conclusion: The fluctuation in the level of calcium is the reason for old age and changes that attend old age. Is there any compound that can prevent the occurrence of anomalous manifestations of old age? Dr. Sealy, with his repeated experiments with a chemical known as iron– dextran, discovered that calcium deposits in the tissue were the preventive agent. Consequently, the anomalous manifestations of infirmity connected with old age are the effect of a self–cultivated human condition that was reproduced and controlled in laboratory experiments upon animals. Dr. Sealy maintains that it is improbable that one can turn a ninety year old person into a sixty year old. However, it is entirely possible to stop the progression of a sixty year old to the deficiencies and anomalous condition of a ninety year old<sup>10</sup>.

In one of his lectures Professor Ottinger reminded the younger generation that one day they might realize the reality that the question of the eternity of the human species must be admitted just as people today have accepted the fact of space travel. With the advanced technology and research pioneered today, it is probably correct to maintain that in the next century a human being will be able to live up to a thousand years<sup>11</sup>.

## A Summary of a Russian Study on the Subject of Old Age

Longevity has been an aspiration as old as human existence on earth. According to the famous Russian scientist Michnikoff, until now human beings have not found any reliable method of prolonging life. Evidently, death is the natural end of life, and there is no being that can escape that fate.

### (1) The Cause of Old Age:

The human body is made up of some sixty trillion cells. These cells gradually become old and when this occurs they are barely able to provide for the basic necessities of the body. Their proliferation is interrupted, and, hence, they die. The nerve and muscle cells that have died gradually increase and turn into a sturdy tissue. This change to hard muscle and nerve tissue as a result of the dead cells is known as sclerosis. Thus we have heart sclerosis, blood vessel sclerosis, nerve sclerosis, and so on.

Ellia Michnikoff, the famous Russian physician and physiologist, used to think that this phenomenon occurs because of the poisonous toxins created by the microbes that had placed themselves into the bowels of an animal and gradually caused the death of the tissues by poisoning them. Pavloff was of the opinion that a series of nerve cells that applied pressure on the brain from outside played a dominant role in aging. Psychologically stressful conditions like depression, despair, fear and so on render the nerve cells worn out and weak. This nervous wearing out is the cause of many infirmities which ushers in old age and subsequently death. The dream of an everlasting life is nothing more than an imagination.

However, an increase of the human life span and a triumph over old age, is regarded as a possibility.

## **(2) The Science for the Study of Aging and Death:**

Some three centuries ago a new branch of biology known as 'gerontology' was born. The goal of gerontology is to investigate and discover practical laws that govern aging in order to conquer them. This branch of scientific inquiry is closely related to another offshoot of the same discipline, namely, thanatology, that is, the study of death. Discovering and studying the laws related to death, and to an extent delaying it, is the scope of this new branch of biology. According to these scientists death is always caused by the disruption of the flow of life, whereas the end of life is known as physiological death.

At present time scientists are engaged in finding ways of prolonging life to its logical and natural limit. This limit, as postulated by these scientists, varies. Pavloff fixed the limit of natural human life to a hundred years. Michnikoff pushed it up to between one hundred fifty and one hundred sixty. Goffland, the famous German physician, and scientist regarded the natural life span to be two hundred years. On the other hand, the nineteenth century physiologist, Dr. Floger, maintained that it was six hundred years. Finally, Roger Bacon speculated it to be a thousand years. None of these scientists produced hard evidence to support their theory about the natural life span for human beings.

## **(3) The Theory Proposed by the Frenchman, Dr. Boufon:**

The famous natural scientist, Dr. Boufon, believed that the life span of any creature was five times the period of its maturation to adulthood. The period of maturation for an ostrich is eight years, and, hence, its average life span is forty years. The maturation period for a horse is two years, and, as such, its average life span is fifteen to twenty years. Consequently, as Boufon maintained, the average life span for human beings is one hundred years, because human maturation continues for twenty years. However, there are many exceptions to Boufon's general formula.

It is for this reason that it has been almost ignored. For example, a sheep matures at five, but lives for ten to fifteen years. A parrot completes its maturation at two, but lives up to a hundred years. In the case of an ostrich, although its maturation is complete at the age of three, it lives for thirty to forty years. In other words, scientists have not been able to determine the limit of the human life span with any certainty. But most of them believe that by eliminating the deficiencies and anomalous conditions that actually lead to the shortening of life, it is possible to prolong the human life span to two hundred years. And, although this scientific belief remains at the theoretical stage, it cannot be dismissed as nonexistent and fanciful.

## **(4) Average Human Life Span:**

In ancient Greece the average human age was 29 years; whereas in ancient Rome it was a little longer

than that. In sixteenth century Europe the average age was 21 years, in the eighteenth century it was 26, and in the nineteenth century it was 34. In the beginning of the twentieth century this average suddenly jumped to 45–50 years. Of course, these figures are from Europe. The reason for the upsurge in the average age today is the decrease in the number of infants dying. There is, however, a noticeable discrepancy between the developed and developing countries in this regard. For example, the average age in Russia is 71 years; whereas in India it is less than 30.

The average life span of other animals compared to human beings does not show any remarkable difference. For comparison with the average human life span, that is 60 to 80 years, it is interesting to note that a duck has an average life span of 30 years, an ostrich 35–40 years, a crow 70 years, a horse 20–30 years, a dog 16–22 years, a frog 16 years, a parrot 90 years, a cat 10–12 years, an eagle 162 years, and so on. It is remarkable that although the human being is regarded as the most perfected species in the animal kingdom, he seems to possess a shorter life span than many other lower creatures.

### **(5) Michnikoff's View:**

A careful evaluation of Michnikoff's theory explains the reason for such a radical variance between the average human age and that of the lower animals. He has conjectured that the reason for aging and untimely death is the infection of the body's cells and tissues which is caused by the secretion of toxic matter by the intestinal bacteria. It is important to bear in mind that the mere position and length of the intestines makes them an attractive habitat for these microorganisms.

An average of 130 trillion microbes are assumed to be born everyday and the majority of them in the intestines are harmless. But some are deadly, producing poisons that cause the body to become ill. In all probability, the resourceful cells and tissues of the body are infected by these microbes which leads to premature aging. By comparison, as indicated above, reptiles live longer than mammals. Reptiles do not have large intestines. Among the birds, only the ostrich has a large intestine and, hence, its average age is lower. Among the animals, cattle seem to live the shortest period. Apparently, the reason again may be their well developed large intestine. A bat also has a small sized large intestine and its life span is longer than that of other insect eating animals who are of similar size in growth. It seems that there is a connection between the development of a large intestine and longevity in human life. However, its importance is not as great as Michnikoff appears to indicate. Some individuals have lived long even after their large intestine was removed. To be sure, the existence of this organ is not necessary for the body. There are also individuals who have lived long with a large intestine. A goal of the scientists who study aging is to identify these individuals and keep them under scientific observation.

### **(6) The Future Human will live longer:**

People who have lived for more than 150 years are few and far apart. Some of those whose names have been mentioned in the books, include:

A Hungarian farmer lived to be 185 years old in 1724. He was reported to have worked until his last moment as if a young person. Another person by the name of John Rawl was 170 years old when he died. His wife was 164 of age years at that time and they had lived together for 130 years. An Albanian by the name of Khude also lived for 170 years. At the time of his death he was survived by 200 children, grandchildren, and great-grand-children. Some time ago a newspaper article reported that a man in South America had died at the age of 207 years. In Russia there are some 30,000 people whose life span has extended beyond a century. Presently, Russian scientists are engaged in investigating the factors that lead to aging and in discovering ways of prolonging life. There is no doubt that human knowledge will overcome aging in the future and that the future generations will be able to live longer lives.

## **A Little Known Theory about the Cause of Death**

At the end of this discussion, it is not a bad idea to keep in mind that there is no doubt that death is associated with the separation of the soul from the body. However, there is another subject worth pursuing, namely, whether infirmity in the body causes the soul to depart and therefore the body is responsible for bringing about death. Or is it the soul which is the main reason for death? Is it the soul that at the time of death is unable to scrutinize the body, which then makes it vulnerable to weakness, aging, and various types of disease?

The majority of scientists and physicians accept the first thesis by maintaining that when the organic energy of the body ends, the entire physical system falls apart. The organs and their ability to perform their function become weak; the main parts become worn out, giving up on the techniques of survival. Since the soul becomes tired and worn out in managing and maintaining the body, it becomes helpless and inevitably leaves the body, causing it to die:

The soul made the intention of leaving.

I told it do not leave.

It said: "What can I do? The house is falling apart! "

Contrary to this there is an opinion held by the great philosopher Mulla Sadra. In his book *Asfar* he maintained that the management and protection of the body is upon the soul. It is the soul that manages the body in the way it wishes. As long as it needs the body it strives to maintain and protect it. But when it attains more independence and no longer depends upon the body to fulfill its needs, the soul becomes less interested in its body and pays little attention to it. As a result, the body experiences infirmity and has worn out. By the time the soul has completely withdrawn from governing the body, death has set in.

Now, friends, you are aware that if this latter theory is proven and if it is established that the decision to die is in the hands of the soul, then the question about the long age of the twelfth Imam (peace be upon

him) becomes easier to explain. In the light of Mulla Sadra's theory one can say that since the holy spirit of the twelfth Imam feels that its existence is a necessity for the betterment of humanity, then it would continuously engage in protecting the body of the Imam and in keeping it young, fresh and energetic.

Let me make it clear in conclusion that I am not in the process of proving or disproving this theory. I am simply introducing it as an unknown theory for the friends at this gathering. I do concede that the subject is unfamiliar and original. We should not be hasty in treating it superficially or in rejecting it because it does not make sense to us. One can judge its merit with certainty only when one is fully informed about the reality of the soul, its impact on and complex relationship with the body. To be sure, this is not an easy task, because it needs to analyze a series of philosophical and psychological matters and to undertake numerous, lengthy and complex biological experiments to understand the soul- body relationship. So far, human knowledge has not reached sufficiently far as to allow one to deduce a valid opinion. Psychology as a science of the mind is still in its early stages of understanding the function of the human soul. Certainly, if human knowledge had paid attention to the human body and soul, our world would have been a totally different place today.

Dr. Alexis Carl, in his book entitled: "The Human, a being unknown," writes: "We do not know about anything about our own existential constitution, except in a limited and imperfect way. If Galileo, Newton, and others like them, had spent their intellectual energy studying the human body and mind, our world view would have been very different than what it is today."

## **Conclusion**

Mr. Hoshyar: Several points can be surmised from what has been discussed so far:

(1) Human life has no limit in the sense that any traversing beyond it would be regarded as impossible. No scientist has ever said that a certain number of years marks the maximum to which human life can reach and that when one arrives to that point then death is inescapable. On the contrary, all the scientists, from west and east, ancient and contemporary, have explained clearly that there is no limit to human life, that the future human can conquer death, or can hold it back for a long time and acquire a long life span. It is this very scientific possibility and the hope for success that has driven the researchers to continue to investigate and experiment, and until now their achievements in this regard have had considerable success.

These experiments have demonstrated that, like other infirmities, death is caused by natural factors and reasons which, if they are identified and if their influence is brought under control, can delay death and allow human beings to live longer and free from its fear.

Just as scientific investigation has been able to discover many reasons and factors that cause illnesses and have been able to control their consequences for human well being, it is reasonable to presume that science will continue to succeed in identifying the causes of death and to prevent their effects in

shortening life span.

(2) Among the living species of plants, animals, and humans there are some which are observed to possess particular distinction in living longer than others of the same species. The existence of such exceptional entities points to the fact that there is no specific limit to their age which cannot be exceeded. While it is true that most humans die before reaching the age of one hundred, our familiarity with that quantity does not constitute a proof that life beyond a hundred is impossible. For there are many individuals who have lived longer than a hundred years. The existence of persons with 150, 180, and 250 years of age is a clear proof that there is absolutely no limit to human age. What does it matter if a human lives for two hundred or two thousand years? Both these figures are ordinarily unfamiliar and unknown.

(3) Old age is not a non-preventive defect. Rather, it is a kind of disease that can be cured. Just as medical science has so far discovered reasons and factors that cause different ailments and has provided remedies for their cure and prevention, it is reasonable to expect that it will also find the causes for aging and will provide the means to contain these. A group of scientists are diligently working to discover the miracle drug for preserving youth. So far these academic endeavors have produced relatively successful results, on the basis of which it is conceivable to expect that in the near future the research will lead to a preventive remedy to overcome aging and to provide a cure for this infirmity. In this case, human beings will be able to preserve their youthful age for a long time.

I am sure you will agree that based on the findings of the researchers and the affirmation of the scientists studying the phenomenon of aging and longevity, it is conceivable to expect that a person who enjoys a perfect genetic constitution and an impeccable organic structure would live a long life. This is even more plausible when it is known that all the physical parts and organs of that person are free from any infirmity or deficiency, and that he follows all the good habits of a healthy life and avoids anything that causes harm or disturbs his existential equilibrium. Moreover, he is free from any hereditary defects, from an immoral life, from stressful conditions. Undoubtedly, such a person enjoys the perfect balance between his bodily and his spiritual requirements which allows him to live a life free from any threat, internal or external, which would cause him to age or to die. Not only do science and wisdom not regard such a long life impossible, they actually have demonstrated its possibility through persistent research.

It is for this reason that one should not regard the extended age of the Imam of the Age (peace be upon him) as an unresolvable problem that defies nature. To the contrary, science and wisdom regard longevity through the preservation of youthful energy and vitality, as an absolutely possible occurrence. If the existence of a particular person was necessary for the universe and if it became imperative that this person should have a long life span, God the Almighty is capable of controlling the system of creation and the series of causation in such a way as to allow this perfect individual to benefit from sciences and other sources of knowledge to further Divine goals for humanity.

Dr. Fahimi: What you have said simply proves the possibility of the existence of such a distinguished

person. But how do we know that such a person does exist in reality?

Mr. Hoshyar: We have already demonstrated, both rationally and revelationally, that the existence of an Imam is necessary for the survival of humanity. Moreover, on the basis of numerous authentic traditions, the number of the Imams does not exceed twelve. In addition, we also proved that the son of Imam Hasan 'Askari, the twelfth Imam, is the promised Mahdi, who was born of a mother and who lives an invisible life in occultation. There are numerous *hadith*-reports to that effect. Now, in support of what we have said about the subject of long life and the confirmation provided by the experts in religious sciences, it is possible to prove such unusual and unknown long life spans.

## Those Who Lived a Long Life in History

Engineer Madani: How can one explain that God endowed only the twelfth Imam with a uniquely long life span that was not given to others?

Mr. Hoshyar: Incidentally, the world has seen the likes of this rare individual. Among them one should mention the name of the Prophet Noah (peace be upon him). Some historians have attributed 2,500 years of age to him. In the Torah 950 years are mentioned. The Qur'an clearly states that he struggled to spread the message of God among his people for 950 years. In the Sura `Ankabut God says:

***Indeed, We sent Noah to his people, and he tarried among them a thousand years, all but fifty; so the flood seized them, while they were evildoers. (19: 14)***

Even when we doubt the historians, we cannot doubt the Qur'an. That heavenly book describes the days of Noah's preaching to his people, namely, 950 years. Now this age is utterly unusual.

Engineer Madani: I have heard that this verse from the Qur'an is among the ambiguous passages that is open to interpretation.

Mr. Hoshyar: Where is the ambiguity in it? Is the ambiguity because of the meaning and the intention which is obscure or brief? Anyone who is minimally familiar with the rules of the Arabic language can explain the verse without any difficulty. If this is regarded as an ambiguous verse in the Qur'an, then there is no clear verse in the Book of God! I cannot agree with the assessment of these people except that I think they are fundamentally opposed to the information contained in the Qur'an, but are afraid to say so.

Mas`udi has mentioned a number of historical figures who lived a long life. Among them are:

Adam, who lived for 930 years; Seth, 912 years; Anush, 960 years; Lot, 732 years; Idris, 300 years; Noah, 950 years; Abraham, 195 years; Jamshid 600 years; `Umar b. `Amir, 800 years; `Ad, 1,200 years<sup>12</sup>.

If you refer to the books on history, hadith, and the Torah you will find numerous persons of this kind mentioned there. However, it is necessary to keep in mind that the main sources for these examples of long age are either the Torah and its histories, whose reliability is not faultless; the 'single' traditions, which do not establish certainty in what they inform; or the books on history that have not been regarded as authentic and which are not free from exaggeration.

Since their authenticity was not clear to me I did not produce them as proofs in my discussion and, in fact, I limited myself only to the long age of Noah, as stated in the Qur'an. If you are interested in investigating the matter further you might read a book on persons who lived long lives, by Abi Hatim Sijistani, *al-Mu'ammarnun wa al-wasaya*. Another book that treats the subject is Abu Rayhan Biruni's *al-Athar al-baqiya*. In addition, there are other historical sources that discuss the matter of the longevity of certain famous people in history.

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1. Encyclopedia Britannica, Article Growth and Development: section dealing with "Aging and Senescence," p. 428
  2. Encyclopedia Britannica, Vol. 14, p. 346
  3. Encyclopedia Americana, Vol. 17, p. 463
  4. *Ittila`at*
  5. The translation of the French article appeared in the annual number of the journal *Shohrat*, 1342 AH, p. 289
  6. The Arabic article is cited by Ayatullah Sadr, *Kitab al-Mahdi* from the journal *al-Muqtatif*, Vol. 59, Number 35, pp. 141-143
  7. *Muntakhab al-athar*, p. 278, citing the journal *al-Hilal*, Vol. 38, Number 5
  8. Based on some foreign journals, translated into Persian in *Danishmand*, Vol. 3, Number 7
  9. *Danishmand*, Vol. 4, Number 45. The section is based on a Russian work translated into Persian, entitled: *Vahti ki insan pir mishavad* (When a human being turns old), tran. by Abu al-Fadl Azmudeh
  10. *Danishmand*, Vol. 3, Number 5
  11. *Danishmand*, Vol. 6, Number 6
  12. *Muruj al-dhahab*, Vol. 1 and 2

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