

Book Reviews

How to Live Longer and Feel Better

Linus Pauling, Ph.D.

Oregon State University Press, 2006

Paperback, 338 pages

Linus Pauling was a man of unsurpassed intellect and good cheer. In *Nature's* Millennium Essay, "The All-chemist", by Gautam Desiraju in 2000, Pauling was ranked with Galileo, Da Vinci, Newton, and Einstein, among others, as "one of the great thinkers and visionaries of the millennium." Desiraju claimed that the "extrapolation from physics to chemistry and the articulation of chemistry as an independent subject was the handiwork of a single individual," Linus Pauling. "Chemistry, then, is utterly different from physics and biology in its dependence, at a primal level, on just one scientist." Desiraju pointed out that Pauling also elucidated the "most fundamental feature" of organic chemistry, that the "hybridization of bond orbitals explains the tetrahedral valences of the saturated carbon atom." Pauling's explanation of the chemical bond, how atoms join to form molecules, and his subsequent work on the structure of complex molecules earned him his first Nobel Prize in 1954. Arthur Kornberg, himself a Nobel laureate, wrote that Pauling deserved another Nobel Prize in medicine for his elucidation of protein structure and for his discovery of an abnormal hemoglobin molecule as the cause of sickle-cell anemia the first disease to be described as a molecular disease.

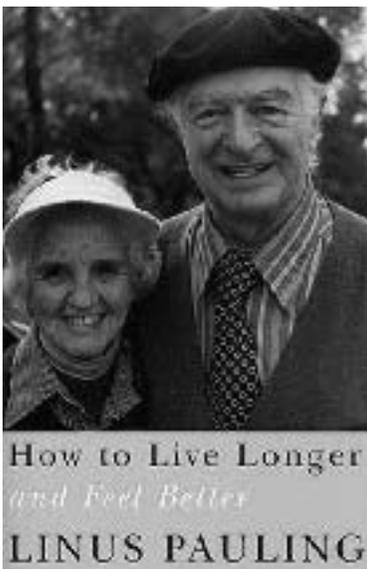
In a paper published in *Science* in 1968,

Pauling coined the term "orthomolecular" to refer to the practice of varying the concentration of molecules normally present in the body to attain optimal health and to prevent and treat disease. At the time, he was particularly interested in the role of micronutrients in brain function, an interest mainly stimulated by reading about research on niacin and schizophrenia by Humphry Osmond and Abram Hoffer.

Pauling soon had good news for the public: vitamin C, previously associated almost exclusively with prevention and treatment of scurvy, may ward off colds and ameliorate their symptoms and duration. Pauling believed that this news would be warmly embraced by the public and the medical community, but he was wrong on the second count. Prompted by disagreements with Victor Herbert, Pauling set out to strengthen his argument by reviewing the somewhat scant clinical literature on vitamin C and colds. The result,

Vitamin C and the Common Cold, was published in 1970 and won the Phi Beta Kappa award as the best scientific book of the year.

As Pauling neared his 85th birthday, he decided to collect what he knew about vitamins and nutrition into a new book for the public. *How to Live Longer and Feel Better* was published in 1986 by W. H. Freeman in hardback and trade paperback editions, followed the next year by a mass-market pocketbook edition by Avon, which remained in print until a few years ago. *How to Live Longer and Feel Better* quickly became a New York Times bestseller and was praised for its simple



suggestions for a longer, healthier life and for the crystal clarity of its presentation of technical information. Pauling embarked on a promotional tour and was clearly the best advertisement for his regimen vital, perceptive, articulate, humorous, charming, and awesomely knowledgeable.

How to Live Longer and Feel Better is organized into five sections. The first, "The Regimen", outlines a simple strategy for a long and healthy life, including the use of vitamin and mineral supplements, avoidance of sugar and tobacco, consumption of a sensible diet providing an ample intake of fruits and vegetables and appealing foods, drinking plenty of water, and the advice to "Avoid stress. Work at a job you like. Be happy with your family." Pauling also discusses some essential aspects of nutrition and comments on eating disorders, including obesity. The second section, "The New Nutrition," explains how vitamins were discovered, describes their role in human biochemistry, and presents excellent discussions of biochemical individuality and vitamins and evolution, including cross-species comparisons and the amount of certain vitamins in a raw plant food diet. Several illustrations of vitamin C and collagen dropped from the Avon edition because of its small size and rough paper quality, are reinstated in this section to conform to the original Freeman edition. The following section, lengthiest in the book, presents a thorough discussion of orthomolecular medicine. This section discusses in detail the effect of vitamins on a host of illnesses and conditions, including cardiovascular disease, cancer, allergies, arthritis, aging, and infectious diseases like the common cold, influenza, and hepatitis. Pauling cites contemporary clinical studies and many published prior to 1970, most of which are difficult, if not impossible, to find in electronic biomedical databases like Medline. Pauling also discusses the role of vitamin C in immune function,

wound healing, and muscular activity vitamin C is required for hydroxylation reactions that convert dietary lysine to carnitine, which is essential in mitochondrial energetics. In the chapter on the brain, Pauling presents the work of Ruth Harrell and Henry Turkel on mental retardation and Down's syndrome, the relationship between IQ and micronutrient intake, and the work of orthomolecular psychiatrists Abram Hoffer and Humphry Osmond on the treatment of affective disorders with niacin and vitamin C. In "Aging and its Moderation and Delay," Pauling explains the ramifications of smoking, alcohol, and exercise on health and aging, speculating that the period of well-being and longevity could be increased by 25 to 35 years by following his prescription for health.

The chapter "Cancer" presents epidemiological and animal studies on cancer and vitamin C, as well as early clinical observations. It begins the discussion of the clinical collaboration between Pauling and Ewan Cameron, a cancer surgeon in Scotland who treated terminal patients with high-dose intravenous and oral vitamin C. This issue is further addressed in the subsequent section, "Vitamins and Drugs," which contains chapters on the side effects and low toxicity of vitamins and compares the actions of drugs and vitamins. Perhaps the most provocative and stirring statements are made in the chapters on organized medicine and on the comparison of vitamins and drugs, in which Pauling outlines the cancer and vitamin C controversy and the resistance of the conventional medical community to evidence about vitamin C and colds. These are also political issues, and Pauling presents a persuasive case that the medical media reflected bias against vitamins. He criticizes the Mayo Clinic studies on vitamin C and cancer as severely flawed and accuses the Mayo clinicians, the National Cancer Institute, and the editor of *The New England Journal of Medicine*

of misrepresentation and bias, even using a rare exclamatory statement in his condemnation of the deliberate use of ineffective chemotherapy in terminal cancer, causing much needless suffering of patients.

Pauling dedicated *How to Live Longer and Feel Better* to his old friend, Arthur Sackler, who was inducted into the Orthomolecular Medicine Hall of Fame in 2006. The 20th anniversary edition includes a new introduction by Melinda Gormley that traces Pauling's work in structural chemistry, molecular biology, and molecular medicine and describes events in his life that led to the development of orthomolecular medicine. An afterword and annotations are also newly provided. The afterword directs readers to resources developed by the Linus Pauling Institute, the Micronutrient Information Center and the LPI Research Newsletter, that provide updated information on micronutrients covered in *How to Live Longer and Feel Better*, as well as information on micronutrients and phytochemicals that have emerged as the foci of intense research interest in the last 20 years. Several typographical errors in previous editions have been corrected, and the book includes a comprehensive bibliography and name and subject indices.

How to Live Longer and Feel Better remains an outstanding classic that presents with utter clarity the basis of orthomolecular medicine. It cites the seminal work of orthomolecular pioneers like the Shutes, Irwin Stone, Fred Klenner, Humphry Osmond, Abram Hoffer, Albert Szent-Gyorgyi, Ewan Cameron, Robert Cathcart, Emanuel Cheraskin, and many others whose published clinical work is often ignored today. Pauling integrates their studies with his own insightful knowledge to produce a text that remains a stunning tour-de-force that is highly recommended to those well versed in orthomolecular medicine and to the uninitiated, curious

reader. The technical discussions are as detailed as necessary, but Pauling does not expect the reader to have a strong background in the relevant sciences.

Pauling ends the book with the sage advice to "not let either the medical authorities or the politicians mislead you. Find out what the facts are, and make your own decisions about how to live a happy life and how to work for a better world." Amen!

—Review by Stephen Lawson

Stop America's #1 Killer: Reversible Vitamin Deficiency Found to be the Origin of All Coronary Heart Disease

Thomas E. Levy, MD, JD
2005, Paperback, 319 pages

If more proof is needed that Dr. Thomas Levy is unique among cardiologists, here it is. Following his 2001 book, *Optimal Nutrition for Optimal Health*, and the outstanding *Vitamin C, Infectious Diseases, and Toxins: Curing the Incurable* (2004), he now turns his full attention to the crucial role of ascorbate in heart disease. In this new book, subtitled "Reversible Vitamin Deficiency Found to be the Origin of All Coronary Heart Disease," Dr. Levy puts it unequivocally: "Coronary heart disease is arterial scurvy. Atherosclerosis is easily preventable and even reversible."

Heavyweight statements such as these need heavyweight support, and Levy provides more than 60 pages of scientific references ranging all the way back to 1906. Those prejudiced by research-date tunnel vision will be quick to opine that old studies don't count. If so, such critics will still have to contend with the fact that several hundred of Levy's citations are since the year 2000. The next edition of this book should therefore contain an index. Levy, an attorney as well as a physi-

cian, knows forensics. He uses 220 pages and 108 summary statements ("exhibits") to build his case historically as well as scientifically. Each chapter's topic is directly related to vitamin C deficiency, including high blood pressure, inflammation, cholesterol, triglycerides, diabetes, coronary artery calcium, artery spasm, oxidative stress, myocardial infarction, heart failure and strength of contraction. It is a very thorough and persuasive presentation, one that could not easily be rebutted, if it can be rebutted at all.

Stop America's #1 Killer concludes with "Practical Suggestions for Stopping/Reversing Atherosclerosis," which lists specific nutritional supplement recommendations. While those for vitamin D (400-1,000 IU/day) and niacin (20 to 25 mg/day) are low, the others are strongly orthomolecular, examples being vitamin C (3,000-9,000 mg/day); lysine (3,000-6,000 mg/day); and vitamin E (400-1,000 IU/day). The 200-1,000 mg daily recommendation for magnesium glycinate (or other magnesium-amino acid chelate) might benefit from a clarification that this refers to the quantity of elemental magnesium, not the tableted product's weight of the element plus its chelating agent. Many food supplement bottles, and therefore many consumers, omit this distinction. Levy's second set of practical dietary recommendations focuses on "Minimization of Dietary Toxicity" by avoiding milk and sugary foods, maximizing fresh vegetable intake, and simply chewing food thoroughly. Good advice. Thirdly, and perhaps more controversially, Dr. Levy advocates what he terms "Total Dental Revision," consisting not only of proper treatment of periodontal disease and the removal of mercury-amalgam fillings, but also the extraction of dental implants and root canal treated teeth. However, he is not inflexible, writing that "the rest of the protocol should still improve overall health dramatically."

Levy's book is an excellent and essential summary of a century of vitamin research in heart disease. But I think it goes beyond that. Linus Pauling's final research interest was the role of vitamin C in stopping cardiovascular disease, and between 1991 and 1993, Pauling and Rath published a series of papers on this topic in the *Journal of Orthomolecular Medicine*. The spirit and scholarship of Dr. Levy's writing suggests that *Stop America's #1 Killer* might come very close to the next book Pauling would have written. We are glad to have it.

—Review by Andrew W. Saul, Ph.D.
JOM Assistant Editor

The following lists the articles written by Linus Pauling and published by the *Journal of Orthomolecular Medicine*

- Rath M, Pauling L: Solution to the puzzle of human cardiovascular disease: its primary cause is ascorbate deficiency leading to the deposition of lipoprotein(a) and fibrinogen/fibrin in the vascular wall. *J Orthomol Med*, 1991; 6:3/4: 125.
- Pauling L, Rath M: An orthomolecular theory of human health and disease. *J Orthomol Med*, 1991; 6, 3/4:135.
- Rath M, Pauling L: Apoprotein(a) is an adhesive protein. *J Orthomol Med*, 1991; 6, 3/4: 139.
- Rath M, Pauling L. Case report: lysine/ascorbate related amelioration of angina pectoris. *J Orthomol Med*, 1991; 6, 3/4: 144.
- Rath M, Pauling L: A unified theory of human cardiovascular disease leading the way to the abolition of this diseases as a cause for human mortality. *J Orthomol Med*, 1992; 7, 1: 5.
- Rath M, Pauling L: Plamin-induced proteolysis and the role of apoprotein(a), lysine and synthetic lysine analogs. *J Orthomol Med*, 1992; 7, 1: 17.
- Pauling L: Third case report on lysine-ascorbate amelioration of angina pectoris. *J Orthomol Med*, 1992; 8, 1: 137.

Fire Your Doctor!

Andrew W. Saul, Ph.D.

 2005, Paperback, 208 pages

Fire Your Doctor! was written by Dr. Saul for the intelligent, interested, lay reader who wants to reduce his/her dependence upon the “health care” (sickness care, to be more accurate) system. But it is of considerable value for doctors (and other “health care” professionals) who have become discontented with what is being advocated by the orthodox authorities.

In 1978 I visited Dr. Humphry Osmond (one of the great co-founders of Orthomolecular Psychiatry) in Tuscaloosa, Alabama. During that visit I sat in on a class held for patients with schizophrenia at the Tuscaloosa Mental Hospital. The purpose of the class was to educate the patients about the nature of their condition and to give them guidance as to how to avoid a recurrence of their symptoms.

This anecdote illustrates a far more profound principle which Dr. Saul brings out in his excellent book.

The literal meaning of the word “doctor” is teacher, hence Ph.D., D.D., LL.D., etc., the possessors of these degrees being entitled to call themselves “doctor.” But that does not enable them to practice medicine. The medical doctor, by virtue of training, experience and the authority granted by the various licensing bodies, takes a history from the patient, performs whatever examination and testing that is required to define the patient’s problem(s), and then ought to teach the patient how to cope with the situation.

Ah, if only that last point were true for the majority of doctors. That it is not is part of the *raison d’être* for the book. All too many doctors fail to carry out this most fundamental part of their duty in their zeal to get as many patients

through their office doors as rapidly as possible. They fail to recognize that it is a duty which is enshrined in case law throughout the civilized world, known as “informed consent.”

The next major point, which Dr. Saul makes throughout the bulk of his book, is that all too many doctors have failed to educate themselves about the alternatives to drug treatment for their patients.

The best definition of a drug that I have ever read is “a deadly poison given in sublethal doses.” Would that were entirely true. The annual death rate in the United States of America, occurring with drugs given in the recommended doses, is variously estimated as between 150,000 and 200,000. In Canada the rate is likely to be between 15,000 and 20,000 because the population is one tenth that of the USA.

For example the annual death rate due to that terrifying condition known as Rhabdomyolysis (where muscle tissue breaks down accompanied by a very high fever) among patients taking the popular anti-cholesterol statin drugs is about 100 per million patients, with an even higher death rate due to liver failure.

By contrast, the world death rate due to the consumption of vitamins in doses much higher than those recommended by the orthodox authorities is precisely zero.

There are two arguments put forward by the orthodoxy to counter these points. Summarizing, the first is that there is no alternative to drugs for many medical conditions (which is often true in emergency situations). The second is that “of course nutrients are only of value in the management of their specific deficiency diseases.”

Backed up by numerous references from the orthodox medical literature, the main bulk of the book refutes both these unfounded assertions.

Dr. Saul introduces a holistic approach to the restoration of health—looking at emotional and behavioural factors

which make people ill and whose correction influence recovery, healthy eating (especially avoidance of refined and otherwise adulterated food), the intelligent use of fasts and juices, and the basic use of nutrients as alternatives to drugs. Of the last he makes a special consideration of finding the optimum dose of vitamin C by bowel tolerance as the single most important factor in restoring health.

Intravenous vitamin C can be given in much higher doses and is still not toxic.

Then Dr. Saul considers a wide variety of common Medical conditions and gives advice about what to do for them.

The only examples which I shall mention are the viral infections, from simple common colds to HIV. So many of them are accompanied or complicated by bacterial infections (bronchitis, pneumonia, cystitis, pyelonephritis, and AIDS as examples), especially in patients already malnourished because of the so-called "civilized diet", which is depleted in all too many nutrients. Most of the bacteria are already harboured by the patients.

Almost universally in such viral infections the vitamin C contained in the white blood cells vanishes within a short time, leaving the cells handicapped in fighting such infections.

Dr. Saul advocates taking 1,000-2,000 mg vitamin C every hour (or even more frequently) at the outset of the symptoms of the infection. The limit is the onset of diarrhea, "bowel tolerance." The total amount of Vitamin C taken to achieve this level is counted up. The next day a slightly lesser total dose ought to be taken either as a single dose or divided up throughout the day. This should be continued so long as the illness continues.

How does a patient know when the illness is getting better? The diarrhea comes back. Then the patient reduces the dose step-wise, controlled by the bowel tolerance, until there is no further reduction. At this level, the highest at which diarrhea

does not occur, is the optimum dose for that particular patient.

This is also the dose which is the most likely to prevent future infections by saturating the defensive, white blood cells. Perhaps everyone ought to determine this dose for themselves before they become ill.

Dr. Saul also mentions other additional factors to aid healing, such as supplementing with selenium in AIDS, as recommended by Dr. Harold Foster.

No, not all doctors ought to be fired by their patients. So, which doctors ought to be so dismissed? Simply, they are the doctors who do not teach their patients about their illnesses; doctors who do not listen to their patients' concerns about the proposed therapies; doctors who forget that yesterday's revealed truth might be tomorrow's laughable fad; doctors who are not sufficiently cynical about the relationships between the pharmaceutical companies, the medical journals and medical schools; doctors who do not ask themselves what it is about the patients' life styles which make them sick; and doctors who do not "believe in" the value of a nutritional approach as if it were a religion, despite evidence to the contrary.

—Review by Erik T. Paterson, M.B.