

mutations for human beings and gorillas and rhesus monkeys and other primates, but rather a single mutational loss—a common ancestor 25 million years ago, living in a tropical valley where the fruit foods were especially rich in vitamin C (providing 10 or 15 grams per day for a body weight of 70 kilograms), underwent a mutation. The mutant lost the machinery for making the vitamin C and was correspondingly streamlined and able to compete and as a result the mutant won out, and we are all descended from this mutant, who suffered this unfortunate accident. As long as our ancestors stayed in this area they were getting enough vitamin C. When they moved into temperate and subarctic regions, the food available contained less vitamin C, and they began to suffer from scurvy.

One measure of good health is resistance to disease. There have been over a dozen carefully controlled studies carried out on a comparison of vitamin C tablets and placebo tablets in blind trials, with respect to the incidence and severity of the common cold. Every one of these studies carried out with people exposed to cold viruses by casual contact with other people has shown that vitamin C has protective value. There is no doubt about it. In fact, if, in addition to taking regular doses of vitamin C, you carry a supply with you and increase the intake at the first sign of a cold, or even other illness, taking 10 to 20 grams during the first day, and then tapering off, you can stop the cold. Many cold medicines make you feel better, but they don't prevent the cold from developing. Vitamin C will do this. Not only that, but vitamin C prevents other diseases.⁴

Occasionally Pauling also cited a third source besides Hotter-Osmond and Stone for his professional introduction to the wonders of ascorbic acid.

ALTHOUGH my wife became interested in vitamin C long ago, shortly after it was discovered, I first became interested in it in 1966, when I read papers by VanderKamp, who showed that the metabolism of this vitamin by chronic schizophrenics is unusual. My wife and I carried out some tests on ourselves and other people, to see what fraction of a large dose of vitamin C that is taken by mouth is excreted in the urine. Dr. Robinson, who was then assistant professor of biology at the University of California, San Diego, and I then began studying patients with acute schizophrenia, in comparison with other people. We verified that there is something unusual in that many schizophrenics have a very low body content of some other vitamins. My interest in vitamin C then spread to its effect on other diseases. I found, when I read the medical literature,

that a number of investigators had reported that a high intake of vitamin C gave some protection against the common cold. I also found that the medical authorities and the authorities in the field of nutrition denied that vitamin C had any such value in protecting against the common cold or any other disease, except scurvy. This discovery caused me to write my book *Vitamin C and the Common Cold*, which was published in 1970.⁵

Actually, though, the precipitating factor that persuaded Pauling to write the bestselling book may have been an individual's reaction to his talk "Medicine in a Rational Society," given in 1969 to medical students and faculty at the opening ceremony of the new Mt. Sinai Medical School in New York City. Already in lectures Pauling was extolling the virtues of vitamins in general and vitamin C in particular. Now, as was customary in the Vietnam War period, Pauling first urged the young physician-candidates to join the revolt against the current immoral militarism of their government and to move toward establishing a rational society, in which they would contribute to progress in health care and biomedical research. Then, after discussing molecular diseases, he asserted that "we should be paying more attention to the natural vital substances, the vitamins and essential amino acids." He went on to describe the condition of avitaminosis—diseases caused by deficiency of particular vitamins in many mental patients. Finally, he praised the vitamin with which his name would henceforth be associated.

A large intake of vitamin C, 1 gram a day or more, has been reported to be of value also in accelerating wound healing and recovery from infection, including the common cold. These reports have been rejected by most medical authorities, who have contended that the usually recommended daily intake, about 50 milligrams, is enough for every person. It is my opinion that we do not know what the optimal daily amount of vitamin C is. I think that for most human beings it may lie between 1 gram and 5 grams per day, far more than the usually recommended 50 milligrams per day; and, moreover, as Professor Roger J. Williams has emphasized, that there may be large differences in the needs of different human beings.

We should know what the optimal daily amounts of the various vitamins are. This is a medical problem that should be attacked and solved.⁶

What happened next was the beginning of a private feud made public, which lasted the rest of Pauling's lifetime, for a quarter century. (It still goes on posthumously, when Pauling is no longer able to talk back to

his vocal, perennial adversary—and to others like him who objected to Pauling's strong beliefs and work in numerous areas concerning science and society.) Pauling had laughed about the start of this altercation when talking in the late seventies during the "Plowboy Interview" for *Mother Earth News* magazine.

THEY had invited several people to speak at this ceremony, so I only had about ten minutes—maybe fifteen—to speak, but in my short talk I mentioned the value of vitamin C in preventing colds as something important to medicine, to health in general.

Well, one of the professors who attended the ceremony wrote me a very strongly worded letter attacking me for having made the statement about vitamin C. He said, "Do you want to support the vitamin quacks that are bleeding the American public of hundreds of millions of dollars a year?" and he asked: "Can you show me a single double-blind study that indicates that vitamin C has any more value than a placebo in fighting colds?"

I wrote to this fellow and told him that no, I couldn't show him any studies, but that I hadn't really looked at the literature, either. And I didn't pursue this for two or three months . . . but it kept bothering me. Finally—after several months—I got around to checking the medical literature . . . and I found *six* double-blind studies, every one of which showed that vitamin C did in fact have more value in preventing colds than a placebo. And by "double-blind" I mean that neither the people dispensing the pills nor the people receiving them knew which pills contained the vitamin C—and which ones were the placebos—until the end of the study. The records were kept, in other words, by a third party.

So again, I wrote to this fellow—I didn't expect to go beyond this, you see—and said that I had found that there were several studies backing me up, one of which was a 1961 study—written in German—by Ritzel. I gave him the reference to Ritzel's paper, and I thought that would end the matter.

The professor wrote back and said that he was too busy to hunt up the reference to Ritzel. Well, I made a Xerox copy of Ritzel's paper and mailed it to him, so he wouldn't have that excuse [laughter]. Then he wrote to me, saying, "I am not impressed by the work of Ritzel." I wrote back and said, "I'm not impressed by your saying that *you re* not impressed by the work of Ritzel. After all, the boys in Ritzel's study who got the vitamin C had only a third as much illness due to colds as the boys who got a harmless placebo . . . and the numbers in the paper have high statistical significance. You can't just say you're 'not impressed' by the work . . . you have to have a reason."

Well, the professor wrote and said that Ritzel didn't give the age of his subjects, nor their sex . . . which happens to be untrue. I wrote the professor and said that because I had lived for a year and a half in Germany after receiving my Ph.D., I could read Ritzel's German without trouble, and it seemed clear to me that Ritzel said that his subjects were all boys in their teens. So then the professor wrote to me and said, "Well, there are two ski camps in the study, and perhaps Ritzel gave the vitamin C to the boys in one ski camp and the placebo to the boys in the other ski camp, and maybe the camps were different in some way, and . . ." Well, I wrote to Ritzel about that, and he said—essentially—"How silly can you get?"

Here's this man, this professor—I didn't identify him when I wrote my book—Victor Herbert, who to this day keeps writing papers and giving speeches saying that no one benefits from taking extra vitamins . . . and he won't even look at the evidence.

The upshot of this whole thing is that I finally became sufficiently irritated by this fellow that I decided I ought to do something about it. So I sat down one summer—here, downstairs in my study—and in two months wrote a book *Vitamin C and the Common Cold*.⁷

Pauling's new book, which he began to write in the spring of 1970, would be simple, readable, and informative, with short chapters. His regular textbook publisher, W. H. Freeman in San Francisco, agreed to issue it. Pauling had already written two popular books before—*No More War!* and *The Architecture of Molecules*.

Most physicians and medical researchers had paid no attention yet to the probability that vitamin C supplementation would improve human health. Another Nobelist, Albert Szent-Gyorgyi (who won the Nobel Prize in Physiology or Medicine for discovering ascorbic acid), also believed that doctors were misleading the public about vitamin C's value. He maintained that the vitamin was fundamental to life and took at least one gram per day. So in *Vitamin C and the Common Cold* Pauling used a tactic with already proven value. Just as he had taken the nuclear-testing issue to the American public, he now set out to deliver his message about vitamin C for general consumption. What sickness was most annoying in its frequent recurrence to Americans? The virus-engendered common cold, of course. Pauling could not understand why physicians did not widely recommend the taking of vitamin C to their patients as an excellent prophylactic.

The book was published in December of 1970. Much to everyone's surprise, it swiftly became a bestseller. Readers picked up Pauling's own enthusiasm for vitamin C. Pauling was in demand as a speaker and a

Linus Pauling
in His Own
Words

Selected Writings,

Speeches, and

Interviews

TOUCHSTONE
Rockefeller Center
1230 Avenue of the Americas
New York, NY 10020

Copyright © 1995 by The Linus Pauling Institute
All rights reserved, including the right of reproduction
in whole or in part in any form.

SIMON A SCHUSTER and colophon are registered trademarks of
Simon & Schuster Inc.

TOUCHSTONE and colophon are registered trademarks of
Simon & Schuster Inc.

Designed by Karolina Harris

Manufactured in the United States of America

1 3 5 7 9 10 8 6 4 2

Library of Congress Cataloging-in-Publication Data
Pauling, Linus, 1901-

Linus Pauling in his own words : selections from his writings,
speeches, and interviews I edited by Barbara Marinacci;
introduction by Linus Pauling.

p. cm.

"A Touchstone book." Includes
bibliographical references and index.

I. Pauling, Linus, 1901- .

2. Science—History. 3. Scientists—United States—Biography.

I. Marinacci, Barbara. II. Title.

Q143,P25A3 1995

081—dc20

95-31123

CIP

ISBN 0-684-80749-1 (Hardcover)

0-684-81387-4 (Pbk.)

All permissions are listed on pages 306-9.