

The Anatomy of an Illness As perceived by a patient

By Norman Cousins

First published in 1979

This book is about a serious illness that occurred in 1964. I was reluctant to write about it for many years because I was fearful of creating false hopes in others who were similarly affected. Moreover, I knew that a single case has small standing in the annals of medical research having little more than anecdotal or testimonial value. However, references to the illness surface from time to time in the general and medical press. People wrote to ask whether it was true that I laughed my way out of a crippling disease that doctors believed to be irreversible.

In view of those questions, I thought it useful to provide a fuller account than appeared in those early reports.

In August of 1964, I flew home from a trip abroad with a slight fever. The malaise which took the form of a general feeling of achiness rapidly deepened. Within a week it had become difficult to move my neck, arms, hands, fingers and legs. My sedimentation rate was over 80. Of all of the diagnostic tests, the "sed" rate is one of the most useful to the physician.

The way it works is beautifully simple. The speed with which red blood cells settle in a test tube, measured in millimeters per hour, is generally proportionate to the severity of an inflammation or infection. A normal illness such as grippe might produce a sedimentation reading of say 30 or even 40. When the rate goes well beyond 60 or 70 however, the physician knows that he is dealing with more than a casual health problem.

I was hospitalized when the sed rate hit 88. Within a week, it was up to 115, generally considered to be a sign of a critical condition.

There were other tests, some of which seemed to me to be more an assertion of the clinical capability of the hospital than of concern for the wellbeing of the patient. I was astounded when four technicians from four different departments took four separate and substantial blood samples on the same day. That the hospital didn't take the trouble to coordinate the tests using one blood specimen seemed to me inexplicable and irresponsible. Taking four large slugs of blood the same day even from a healthy person is hardly to be recommended.

When the technicians came in the second day to fill their containers with blood for processing in separate laboratories, I turned them away and had a sign posted on my door saying that I would give just one specimen every three days and that I expected the different departments to draw from one vial for their individual needs.

I had a fast growing conviction that a hospital is no place for a person who is seriously ill. The surprising lack of respect for basic sanitation, the rapidity with which staphylococci and other pathogenic organisms can run through an entire hospital, the extensive and sometimes promiscuous use of x-ray equipment, the seemingly indiscriminate administration of tranquilizers and powerful painkillers, sometimes more for the convenience of hospital staff in managing patients than for therapeutic needs, and the regularity with which hospital routine takes precedence over the rest requirements of the patients (slumber when it comes for an ill person is an uncommon blessing and is not to be wantonly interrupted), all these and other practices seemed to me to be critical shortcomings of the modern hospital.

Perhaps the hospital's most serious failure was in the area of nutrition. It was not just that the meals were poorly balanced, what seemed inexcusable to me was the profusion of processed foods, some of which contained preservatives or harmful dyes. White bread with its chemical softeners and bleached flour was offered with every meal. Vegetables were often overcooked and thus deprived of much of their nutritional value. No wonder the 1969 White House Conference on Food, Nutrition and Health made the melancholy observation that a great failure of medical school is that they pay so little attention to the science of nutrition.

My doctor did not quarrel with my reservations about hospital procedures. I was fortunate to have as a physician a man who was able to put himself in the position of the patient. Dr. William Hitzig supported me in the measures I took to fend off the random sanguinary assaults of the hospital laboratory attendants. We had been close friends for more than twenty years and he knew of my own deep interest in medical matters. We had often discussed articles in the medical press, including the New England Journal of Medicine (NEJM) and the Lancet.

He was candid with me about my case. He reviewed the reports of the various specialists he had called in as consultants. He said there was no agreement on the precise diagnosis. There was however a consensus that I was suffering from a serious collagen illness, a disease of the connective tissue. All arthritic and rheumatic diseases are in this category. Collagen is the fibrous substance that binds the cells together. In a sense then, I was coming unstuck.

I had considerable difficulty in moving my limbs, and even in turning over in bed. Nodules appeared on my body, gravel like substances under the skin indicating the systemic nature of the disease. At the low point of my illness, my jaws were almost locked.

Dr. Hitzig called in experts from Dr. Howard Rusk's rehabilitation clinic in New York. They confirmed the general opinion, adding the more particularized diagnosis of ankylosing spondylitis which would mean that the connective tissue in the spine was disintegrating.

I asked Dr. Hitzig about my chances for full recovery. He leveled with me, admitting that one of the specialists had told him I had one chance in 500. The specialist had also stated he had not personally witnessed a recovery from this comprehensive condition.

All this gave me a great deal to think about. Up to that time, I had been more or less disposed to let the doctors worry about my condition but now I felt a compulsion to get into the act. It seemed clear to me that if I was to be that 1 in 500, I had better be something more than a passive observer. I asked Dr. Hitzig about the possible origin of my condition. He said that it could have come from any one of a number of causes. It could have come, for example, from heavy metal poisoning. Or it could have been the after effect of a streptococcal infection.

I thought as hard as I could about the sequence of events immediately preceding the illness. I had gone to the Soviet Union in July of 1964 as Chairman of an American delegation to consider the problems of cultural exchange. The Conference had been held in Leningrad, after which we went to Moscow for supplementary meetings. Our hotel was in a residential area. My room was on the second floor. Each night, a procession of diesel trucks plied back and forth to a nearby housing project in the process of round the clock construction. It was summer and our windows were wide open. I slept uneasily each night and felt somewhat nauseated on arising. On our last day in Moscow at the airport, I caught the exhaust spew of a large jet at point blank range as it swung around on the tarmac.

As I thought back on that Moscow experience, I wondered whether the exposure to the hydrocarbons from the diesel exhaust at the hotel and at the airport had anything to do with the underlying cause of the illness. If so, that might account for the speculations of the doctors concerning heavy metal poisoning. The trouble with this theory however was that my wife who had been with me on the trip had no ill effects from the same exposure. How likely was it that only one of us would have reacted adversely?

It seemed to me as I thought about it that there were two possible explanations for the different reactions. One had to do with individual allergy. The second was that I could have been in a condition of adrenal exhaustion and less apt to tolerate a toxic experience than someone whose immunological system was fully functional. Was adrenal exhaustion a factor in my own illness?

Again, I thought carefully. The meetings in Leningrad and Moscow had not been casual. Paperwork had kept me up late at night. I had ceremonial responsibilities. Our last evening in Moscow had been at least for me an exercise in almost total frustration. A reception had been arranged by the Chairman of the Soviet delegation at his dacha located 35-40 miles outside the city. I had been asked if I could arrive an hour early so that I might tell the Soviet delegates something about the individual Americans who were coming to dinner. The Russians were eager to make the Americans feel at home, and they had thought such information would help them with the social amenities. I was told that a car and driver from the Government automobile pool in Moscow would pick me up at the hotel at 3:30 pm. This would allow ample time for me to drive to the dacha by 5:00 when all our Russian conference colleagues would be gathered for the social briefing. The rest of the American delegation would arrive at the dacha at 6:00 pm.

At 6:00, however, I found myself in open country on the wrong side of Moscow. There had been a misunderstanding in the transmission of directions to the driver, the result being that we were some 80 miles off course. We finally got our bearings

and headed back to Moscow. Our chauffeur had been schooled in cautious driving. He was not disposed to make up lost time. I kept wishing for a driver with a compulsion to prove that auto racing, like baseball, originally came from the USSR. We didn't arrive at the dacha until 9:00 pm. My host's wife looked desolate. The soup had been heated and reheated, the veal was dried out, I felt pretty wrung out myself.

It was a long flight back to the States the next day. The plane was overcrowded. By the time we arrived in New York, cleared through the packed customs counters and got rolling back to Connecticut, I could feel an uneasiness deep in my bones. A week later, I was hospitalized.

As I thought back on my experience abroad, I knew that I was probably on the right track in my search for a cause of the illness. I found myself increasingly convinced, as I said a moment ago, that the reason I was hit hard by the diesel and jet pollutants, whereas my wife was not, was that I had had a case of adrenal exhaustion lowering my resistance. Assuming this hypothesis was true, I had to get my adrenal glands functioning properly again and to restore what Walter B. Cannon in his famous book "The Wisdom of the Body" called homeostasis.

I knew that the full functioning of my endocrine system - in particular the adrenal glands - was essential for combatting severe arthritis or, for that matter, any illness. A study I had read in the medical press reported that pregnant women frequently have remissions of arthritic or other rheumatic symptoms. The reason is that the endocrine system is fully activated during pregnancy. How was I to get my adrenal glands and my endocrine system in general working well again?

I remembered have read ten years or so earlier Hans Selye's classic book "The Stress of Life". With great clarity Selye showed that adrenal exhaustion could be caused by emotional tension such as frustration or suppressed rage. He detailed the negative effects of the negative emotions on body chemistry. The inevitable question arose in my mind "What about the positive emotions?" If negative emotions produce negative chemical changes in the body, wouldn't the positive emotions produce positive chemical changes? Is it possible that love, hope, faith, laughter, confidence and the will to live have therapeutic value? Do chemical changes occur only on the downside?

Obviously, putting the positive emotions to work was nothing so simple as turning on a garden hose. But even a reasonable degree of control over my emotions might have a salutary physiologic effect. Just replacing anxiety with a fair degree of confidence might be helpful.

A plan began to form in my mind for systematic pursuit of the salutary emotions and I knew that I would want to discuss it with my doctor. Two preconditions, however, seemed obvious for the experiment. The first concerned my medication. If that medication were toxic to any degree, it was doubtful whether the plan would work. The second precondition concerned the hospital. I knew I would have to find a place somewhat more conducive to a positive outlook on life. Let's consider these conditions separately.

First, the medication. The emphasis had been on pain killing drugs: aspirin, phenylbutazone (butazolidin), codeine, colchicine, sleeping pills. The aspirin and phenylbutazone were anti-inflammatory and thus were therapeutically justifiable. But I wasn't sure they weren't also toxic. It developed that I was hypersensitive to virtually all the medication I was receiving. The hospital had been giving me maximum dosages: 26 aspirin tablets and 12 phenylbutazone tablets a day. No wonder I had hives all over my body and felt as though my skin was being chewed up by millions of red ants. It was unreasonable to expect positive chemical changes to take place so long as my body was being saturated with and toxified by pain killing medications.

I had one of my research assistants at the Saturday Review look up the pertinent references in the medical journals and found that drugs like phenylbutazone and even aspirin levy a heavy tax on the adrenal glands. I also learned that phenylbutazone is one of the most powerful drugs being manufactured. It can produce bloody stools, the result of its antagonism to fibrinogen. It can cause intolerable itching and sleeplessness. It can depress bone marrow.

Aspirin of course enjoys a more auspicious reputation, at least with the general public. The prevailing impression of aspirin is that it is not only the most harmless drug available but also one of the most effective. When I looked into research in the medical journals however, I found that aspirin is quite powerful in its own right and warrants considerable care in its use. The fact that it can be bought in unlimited quantities without prescription or doctor's guidance seemed indefensible. Even in small amounts it can cause internal bleeding. Articles in the medical press reported that the chemical composition of aspirin, like that of phenylbutazone, impairs the clotting function of platelets, disc shaped substances in the blood. It was a mindboggling train of thought. Could it be, I asked myself, that aspirin so universally accepted for so many years was actually harmful in the treatment of collagen illnesses such as arthritis?

The history of medicine is replete with accounts of drugs and modes of treatments that were in use for many years before it was recognized that they did more harm than good. For centuries, for example, doctors believed that drawing blood from patients was essential for rapid recovery from virtually every illness. Then, midway through the nineteenth century, it was discovered that bleeding served only to weaken the patient. King Charles II's death is believed to have been caused in part by administered bleedings. George Washington's death was also hastened by the severe loss of blood resulting from this treatment.

Living in the second half of the twentieth century, I realized, confers no automatic protection against unwise or even dangerous drugs and methods. Each age has had to undergo its own special nostrums. Fortunately, the human body is a remarkably durable instrument and has been able to withstand all sorts of prescribed assaults over the centuries from freezing to animal dung.

Suppose I stopped taking aspirin and phenylbutazone. What about the pain? The bones in my spine and practically every joint in my body felt as though I had been run over by a truck. I knew that pain could be affected by attitudes. Most people become panicky about almost any pain. On all sides they have been so bombarded

by advertisements about pain that they take this or that analgesic at the slightest sign of an ache. We are largely illiterate about pain and so are seldom able to deal with it rationally.

Pain is part of the body's magic. It is the way the body transmits a sign to the brain that something is wrong. Leprous patients pray for the sensation of pain. What makes leprosy such a terrible disease is that the victim usually feels no pain when his extremities are being injured. He loses his fingers or toes because he receives no warning signal. I could stand pain so long as I knew that progress was being made in meeting the basic need. That need, I felt, was to restore the body's capacity to halt the continuing breakdown of connective tissue.

There was also the problem of the severe inflammation. If we dispensed with the aspirin, how would we combat the inflammation? I recalled having read in the medical journals about the usefulness of ascorbic acid in combatting a wide number of illnesses, all the way from bronchitis to some types of heart disease. Could it also combat inflammation? Did vitamin C act directly or did it serve as a starter for the body's endocrine system, in particular the adrenal glands? Was it possible, I asked myself, that ascorbic acid had a vital role to play in feeding the adrenal glands?

I had read in the medical press that vitamin C helps to oxygenate the blood. If inadequate or impaired oxygenation was a factor in collagen breakdown, couldn't this circumstance have been another argument for ascorbic acid? Also, according to some medical reports, people suffering from collagen diseases are deficient in vitamin C. Did this lack mean that the body uses up large amounts of vitamin C in the process of combatting collagen breakdown?

I wanted to discuss some of these ruminations with Dr. Hitzig. He listened carefully as I told him of my speculations concerning the cause of the illness, as well as my layman's ideas for a course of action that might give me a chance to reduce the odds against my recovery. Dr. Hitzig said it was clear to him that there was nothing undersized about my will to live. He said that what was most important was that I continue to believe in everything I had said. He shared my excitement about the possibilities of recovery and liked the idea of a partnership. Even before we had completed arrangements for moving out of the hospital, we began the part of the program calling for the full exercise of the affirmative emotions as a factor in enhancing body chemistry.

It was easy enough to hope and love and have faith but what about laughter? Nothing is less funny than being flat on your back with all the bones in your spine and joints hurting. A systematic program was indicated.

A good place to begin, I thought, was with amusing movies. Alan Funt, producer of the spoofing television program Candid Camera sent films of some of his CC classics along with a motion picture projector. The nurse was instructed in its use. We were even able to get our hands on some old Marx Brothers films. We pulled down the blinds and turned on the machine. It worked. I made the joyous discovery that ten minutes of genuine belly laughter had an anesthetic effect and would give me at least two hours of pain free sleep. When the pain killing effect of the laughter wore off, we would switch on the motion picture projector again and, not infrequently,

it would lead to another pain free sleep interval. Sometimes the nurse read to me out of a trove of humor books. Especially useful were the E.B. and Katharine White's "*Subtreasury of American Humor*" and Max Eastman's "*The Enjoyment of Laughter*".

How scientific was it to believe that laughter - as well as the positive emotions in general - was affecting my body chemistry for the better? If laughter did in fact have a salutary effect on the body's chemistry, it seemed at least theoretically likely that it would enhance the system's ability to fight the inflammation. So, we took sedimentation rate readings just before as well as several hours after the laughter episodes. Each time there was a drop of at least five points. The drop by itself was not substantial but it helped and was cumulative. I was greatly elated by the discovery that there is a physiologic basis for the ancient theory that laughter is good medicine.

There was, however, one negative side effect of the laughter from the standpoint of the hospital. I was disturbing other patients. But that objection didn't last very long for the arrangements were now complete for me to move my act to a hotel room. One of the incidental advantages of the hotel room, I was delighted to find, was that it cost only about one third as much as the hospital. The other benefits were incalculable. I would not be awakened for a bed bath or for meals or for medication or for a change of bed sheets or for tests or for examinations by hospital interns. The sense of serenity was delicious and would, I felt certain, contribute to a general improvement.

What about ascorbic acid and its place in the general program for recovery? In discussing my speculations about vitamin C with Dr. Hitzig, I found him completely open minded on the subject, although he told me of serious questions that had been raised by scientific studies. He also cautioned me that heavy doses of ascorbic acid carried some risks of adrenal damage. The main problem right then, however, was not my kidneys, it seemed to me that, on balance, the risk was worth taking. I asked Dr. Hitzig about previous recorded experience with massive doses of vitamin C and he ascertained that at the hospital, there had been cases in which patients had received up to three grams by intramuscular injection.

As I thought about the injection procedure, some questions came to mind. Introducing ascorbic acid directly into the blood stream might make more effective use of the vitamin but I wondered about the body's ability to utilize a sudden massive infusion. I knew that one of the great advantages of vitamin C is that the body takes only the amount necessary for its purposes and excretes the rest. Again, there came to mind Cannon's phrase "The Wisdom of the Body". Was there a coefficient of time in the utilization of ascorbic acid?

The more I thought about it, the more likely it seemed to me that the body would excrete a large quantity of the vitamin because it could not metabolize it fast enough. I wondered whether a better procedure than injection would be to administer the ascorbic acid through slow intravenous drip over a period of three or four hours. In this way, we could go far beyond three grams. My hope was to start at ten grams, and then increase the dose daily until we reached twenty-five grams.

Dr. Hitzig's eyes widened when I mentioned twenty-five grams. This amount was far beyond any recorded dose. He said he had to caution me about the possible effects, not just on the kidneys but on the veins in the arms. Moreover, he said he knew of no data to support the assumption that the body could handle twenty-five grams over a four-hour period other than by excreting it rapidly through the urine. As before, however, it seemed to me we were playing for bigger stakes. Losing some veins was not of major importance alongside the need to combat whatever was eating at my connective tissue.

To know whether we were on the right track, we took a sedimentation test before the first intravenous administration of 10 grams of ascorbic acid. Four hours later, we took another sedimentation test. There was a drop of nine full points. Seldom had I known such elation. The ascorbic acid was working, so was laughter. The combination was cutting heavily into whatever poison was attacking the connective tissue. The fever was receding and the pulse was no longer racing. We stepped up the dosage. On the second day, we went to twelve point five grams of ascorbic acid. On the third day, fifteen grams and so on until at the end of the week, when we reached twenty-five grams.

Meanwhile, the laughter routine was in full force. I was completely off drugs and sleeping pills. Sleep - blessed natural sleep without pain - was becoming increasingly prolonged. At the end of the eighth day, I was able to move my thumbs without pain. By this time, the sedimentation rate was somewhere in the eighties and dropping fast. I couldn't be sure but it seemed to me that the gravel like nodules on my neck and the back of my hands were beginning to shrink. There was no doubt in my mind that I was going to make it back all the way. I could function and the feeling was indescribably beautiful.

I must not make it appear that all my infirmities disappeared overnight. For many months, I couldn't get my arms up far enough to reach for a book on a high shelf. My fingers weren't agile enough to do what I wanted them to do on the organ keyboard. My neck had a limited turning radius. My knees were somewhat wobbly and off and on I have had to wear a metal brace. Even so, I was sufficiently recovered to go back to my job at the Saturday Review full time again, and this was a miracle enough for me.

Is the recovery a total one? Year by year, the mobility has improved. I have become pain free except for one shoulder and my knees, although I have been able to discard the metal braces. I no longer feel a sharp twinge in my wrists when I hit a tennis ball or golf ball as I did for such a long time. I can ride a horse flat out and hold a camera with a steady hand. And I have recaptured my ambition to play the toccata and fugue in D Minor, though I find the going slower and tougher than I had hoped. My neck has a full turning radius again, despite the statements of specialists as recently as 1971 that the condition was degenerative and that I would have to adjust to a quarter turn.

It was seven years after the onset of the illness before I had scientific confirmation about the dangers of using aspirin in the treatment of collagen diseases. In its May 8th, 1971 issue, the Lancet published a study by Doctors M.A. Sahud and R.J. Cohen showing that aspirin can be antagonistic to the retention of vitamin C in the body.

The authors said that patients with rheumatoid arthritis should take vitamin C supplements since it has often been noted that they have low level of the vitamin in their blood. It was no surprise then that I had been able to absorb such massive amounts of ascorbic acid without kidney or other complications.

What conclusions do I draw from the entire experience? The first is that the will to live is not a theoretical abstraction but a physiologic reality with therapeutic characteristics. The second is that I was incredibly fortunate to have as my doctor a man who knew that his biggest job was to encourage to the fullest the patient's will to live and to mobilize all the natural resources of body and mind to combat disease. Dr. Hitzig was willing to set aside the large and often hazardous armamentarium of powerful drugs available to the modern physician when he became convinced that his patient might have something better to offer. He was also wise enough to know that the art of healing is still a frontier profession. And, though I can't be sure at this point, I have a hunch he believed that my own total involvement was a major factor in my recovery.

People have asked what I thought when I was told by the specialists that my disease was progressive and incurable. The answer is simple. Since I didn't accept the verdict, I wasn't trapped in the cycle of fear, depression and panic that frequently accompanies a supposedly incurable disease. I must not make it seem, however, that I was not mindful of the seriousness of the problem, or that I was in a festive mood throughout. Being unable to move my body was all the evidence I needed that the specialists were dealing with real concerns. But deep down, I knew I had a good chance and relished the idea of bucking the odds.

Adam Smith in his book "Powers of the Mind" says he discussed my recovery with some of his doctor friends, asking them to explain why the combination of laughter and ascorbic acid worked so well. The answer he got was that neither laughter nor ascorbic acid had anything to do with it, and that I probably would have recovered if nothing had been done. Maybe so, but that was not the opinion of the specialists at the time. Two or three doctors reflecting on the Adam Smith account have commented that I was probably the beneficiary of a mammoth venture in self-administered placebos.

Such a hypothesis bothers me not at all. Respectable names in the history of medicine like Paracelsus, Holmes and Osler have suggested that the history of medication is far more the history of the placebo effect than of intrinsically valuable and relevant drugs. Such modalities as bleeding (in a single year, 1872, imported thirty-three million leeches after its domestic supplies had been depleted), purging through emetics, physical contact with unicorn horns, bezoar stones, mandrakes or powdered mummies, all such treatments were no doubt regarded by physicians at the time as specifics with empirical sanctions. But today's medical science recognizes that whatever efficacy these treatments may have had - and the records indicate that the results were surprisingly in line with expectations - was probably related to the power of the placebo.

Until comparatively recently, medical literature on the phenomenon of the placebo has been rather sparse but the past two decades have seen a pronounced interest in the subject. Indeed, three medical researchers at the University of California, Los

Angeles, have compiled an entire volume on the bibliography of the placebo (J. Turner, R. Jallimore, C. Fox "Placebo: an Annotated Bibliography". The Neuropsychiatric Institute, University of California, Los Angeles, 1974.) Among the medical researchers who have been prominently engaged in such studies are Arthur K. Shapiro, Stewart Wolf, Henry K. Beecher and Louis Lasagna.

In connection with my own experience, I was fascinated by a report citing a study by Dr. Thomas C. Chalmers of the Mount Sinai Medical Center in New York, which compared two groups that were being used to test the theory that ascorbic acid is a cold preventative. "The group on placebo who thought they were on ascorbic acid", says Dr. Chalmers, "had fewer colds than the group on ascorbic acid who thought they were on placebo." I was absolutely convinced at the time I was deep in my illness that intravenous doses of ascorbic acid could be beneficial. And they were.

It is quite possible that this treatment, like everything else I did, was a demonstration of the placebo effect. At this point of course we are opening a very wide door, perhaps even a Pandora's box. The vaunted "miracle cures" that abound in the literature of all the great religions all say something about the ability of the patient properly motivated or stimulated to participate actively in extraordinary reversals of disease and disability.

It is all too easy of course to raise these possibilities and speculations to a monopoly status, in which case the entire edifice of modern medicine would be reduced to little more than the hut of an African witch doctor. But we can at least reflect on William Halse Rivers' statement as quoted by Shapiro that "the salient feature of the medicine of today is that these psychological factors are no longer allowed to play their part unwittingly but are themselves becoming the subject of study so that the present age is serving the growth of a rational system of psychotherapeutics."

What we are talking about essentially, I suppose, is the chemistry of the will to live. In Bucharest in 1972, I visited the clinic of Ana Aslan described to me as one of Romania's leading endocrinologists. She spoke of her belief that there is a direct connection between a robust will to live and the chemical balances in the brain. She is convinced that creativity, one aspect of the will to live, produces the vital brain impulses that stimulate the pituitary gland, triggering effects on the pineal gland and the whole of the endocrine system.

Is it possible that placebos have a key role in this process? Shouldn't this entire area be worth serious and sustained attention? If I had to guess, I would say that the principal contribution made by my doctor to the taming, and possibly the conquest, of my illness was that he encouraged me to believe I was a respected partner with him in the total undertaking. He fully engaged my subjective energies. He may not have been able to define or diagnose the process through which self-confidence (wild hunches securely believed) was somehow picked up by the body's immunologic mechanisms and translated into anti-morbid effects. But he was acting, I believe, in the best tradition of medicine in recognizing that he had to reach out in my case beyond the usual verifiable modalities. In so doing, he was faithful to the first dictum in his medical education: "Above all, do no harm."

Something else I have learned. I have learned never to underestimate the capacity of the human mind and body to regenerate, even when the prospects seem most wretched. The life force may be the least understood force on earth. William James said that human beings tend to live too far within self-imposed limits. It is possible that these limits will recede when we respect more fully the natural drive of the human mind and body towards perfectibility and regeneration. Protecting and cherishing that natural drive may well represent the finest exercise of human freedom.

Please Note:

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