



The crab *cancerinae*,
in a steel engraving repro-
duced from an 1851 encyclopedia.

The Crab Within

By James O. Freedman

Cancer — a word based on the Latin and Greek terms for “crab” — has long had a hold on the human psyche going far beyond its manifestation as a mere disease. Here, the president of Dartmouth College explores cancer's history and sociology and offers an eloquent defense of the need for continued research into possible causes and cures.

Cancer is one of the oldest known diseases. The National Cancer Institute, in a 1987 book called *Closing In on Cancer: Solving a 5,000-Year-Old Mystery*, describes cancer as “older than man, stalking dinosaurs long before the earliest written records document its ravages among humans.”

The term “cancer” derives from both the Latin and the Greek, in each instance from words originally meaning crab — apparently because of the crablike appearance of certain tumors. In the first century, the Latin philosopher Celsus declared that cancers “arise from within, from some part of the body which has been corrupted.” The second-century physician Galen took note of “swellings contrary to nature” and identified black bile as the cause of cancer. And Hippocratic medicine attributed malignant tumors to an abnormal accretion of humors.

It is, in short, a disease — or, perhaps more properly, a constellation of more than a hundred diseases, each with different symptoms, treatment options, and chances of recovery — that has compelled our attention from a very early point in our history as a species and that has long exercised a grim power over our imagination and our social and scientific endeavors.

Having myself been diagnosed with cancer just over a year ago, and having only recently completed a six-month regimen of chemotherapy, I have developed a healthy interest in the ways in which our society deals with cancer. I have learned that cancer has always been not only a medical phenomenon, but a social, psychological, and cultural phenomenon as well. There is a stern reality to the disease that extends beyond its biological reality, creating attitudes that affect our thinking about it both individually and as a society.

Indeed, the fear of cancer as a near-certain death warrant — what one writer has called “the contemporary equivalent of the guillotine” — has been one of its characteristic elements throughout much of this century, as has the disease’s stigmatizing character.

During the late 19th and early 20th centuries, the word “cancer” became the dominant disease metaphor for many social ills in urban and industrial society, much as tuberculosis had been the prevailing metaphor for alarming social conditions in the first half of the 19th century. It came to be used to designate specific phenomena that society feared or sought to condemn, from uncontrolled population growth to



Top, the second-century physician Galen, in a woodcut from Ambroise Paré’s 16th-century tome, *Surgery*. Galen attributed cancer to “black bile,” one of the four humors. Bottom, an illustration of black bile, also called melancholia, from a 15th-century manuscript.

criminal practices such as political corruption. Recall, for example, how John Dean told President Nixon, “We have a cancer within, close to the presidency, that is growing. It is growing daily. It’s compounded, growing geometrically now, because it compounds itself.”

This metaphorical use of the word “cancer” was hardly desirable. As “long as a particular disease is treated as an evil, invincible predator, not just a disease,” writes Susan Sontag in her book *Illness as Met-*

Cancer is a disease that has long exercised a grim power over our imagination and our social and scientific endeavors.

The author has been president of Dartmouth College since 1987. This article is adapted from his keynote address at the July 7 dedication of the Barbara E. Rubin Building — the new home of DHMC’s Norris Cotton Cancer Center. See page 8 in this issue for coverage of the dedication ceremonies.



On this page is a 1934 painting titled "Tenement Flats" by Millard Sheets. Scenes of urban blight have sometimes been described as a "cancer" within society. On the facing page is a self-portrait by French physician-cum-artist Georges Chicotot. Titled "First Attempt at the Treatment of Cancer by Doctor Chicotot," the 1908 scene was rendered at a time when medical treatment of cancer was just beginning to be accepted as an alternative to a purely surgical approach to the disease.

aphor, "most people with cancer will indeed be demoralized by learning what disease they have."

Indeed, Dr. Charles H. Mayo wrote in 1926, "While there are several diseases more destructive to life than cancer, none is more feared." Cancer was a disease to be spoken of socially in the most hushed of tones, if at all. There was a sense that the mere fact of naming cancer, as with other forces we dread and do not understand, was an act of devastation. For much of this century, few people would admit to the stigma of having cancer. Obituaries resolutely avoided mentioning the disease until perhaps 30 years ago, preferring to ascribe death, euphemistically, to a "serious" or "extended" illness.

Nowhere can the change in social attitudes toward cancer be seen more clearly than in the contrast between the secrecy that surrounded the treatment of President Cleveland for cancer of the mouth and jaw in 1893 and the openness that characterized the treatment of President Reagan for cancer of the colon in 1985. We can take satisfaction in having substantially removed the stigma of cancer from public discourse so that physicians, patients, and the press may now speak of cancer more matter-of-factly than ever before. This humane advance can only facilitate our treatment of the disease.

Just as our attitudes toward cancer as a disease have changed during the course of this century, so, too, have the ways in which we treat cancer medically and surgically. The recent history of these changes is instructive. For much of the late 19th century, cancer was regarded as a disease process localized to a given area of the body and, therefore, one primarily within

the province of surgeons. Surgeons of that era urged their generalist colleagues not to temporize with medical treatments, but to refer cancer patients to them immediately.

One such 19th-century surgeon, Dr. W.L. Rodman of St. Louis, wrote, "Let it be remembered as an axiom that every growth, benign or malignant, should be condemned to the knife at the earliest practicable moment." As a result of that view, promoted by the most eminent surgeons of the day, reliance upon radical surgery, often of a disfiguring kind, became the common practice for many decades to come.

Eventually, however, physicians devoted to the treatment of cancer moved beyond the conceptualization of the disease as primarily a localized one. They came to regard cancer, rather, as a collection of systemic diseases with local manifestations. They drew back from reliance upon radical surgical procedures. This new approach not only represented a change in treatment; it also heralded a more humane concern for the psychological well-being of patients, by recognizing that cancer was not merely a disease but also a state of mind.

Today, oncologists and the many other professionals concerned with identifying the causes of cancer and providing for its treatment are deeply engaged in exploring promising theories of genesis and metastasis that include diverse cell types, viruses, and oncogenes.

Dartmouth-Hitchcock Medical Center's Norris Cotton Cancer Center is a vital part of the national effort to combat cancer, having been established just a year after the 1971 passage of the National Cancer Act — President Nixon's declaration of war against cancer. At the time, Americans were much taken by the metaphor of war, captivated by the notion that virtually any all-out effort to achieve a significant national goal must surely succeed.

Recent experience had reinforced that sense. After the Soviet Union's 1957 launching of the spaceship Sputnik, President Kennedy appealed in 1961 for the mobilization of a national effort, based upon scientific research, to land an American on the moon by the end of the decade. That ambitious initiative succeeded, in the process boosting the confidence of the country that our collective determination would enable us to accomplish virtually anything we set out to achieve.

A nation that could conquer the moon could surely conquer the scourge of cancer. Accordingly, the National Cancer Act was promoted as a charter for scientific research that would enlarge our understanding of the causes and progression of cancer, as well as reduce its incidence in the lives of Americans.

When the National Cancer Institute was established in 1971, it had a budget of \$230 million.

A decade later, its budget had grown to \$1.6 billion (although later funding levels, measured in constant dollars, have not much exceeded \$1 billion a year).

As part of this new cancer initiative, institutions like the Norris Cotton Cancer Center were established on the firm foundation of both basic and clinical research. These institutions have prospered in an atmosphere of cooperation between the government and universities, proving the value of investigator-initiated, peer-reviewed, grant-supported research.

The continuing case for federally supported cancer centers is evident on many sides. First, these centers address a significant national problem. Consider the statistics. More than a million new cases of cancer are diagnosed in this country every year, and every year more than half a million Americans die of cancer. Indeed, cancer is the cause of one in five deaths in America today. A medical phenomenon of such consequence deserves the serious attention of the federal government.

Second, research carried out at the nation's cancer centers has made great strides in enabling us to identify cancer at earlier stages in a very considerable number of patients, thereby increasing the chances of effective treatment. It has also made spectacular progress in enlarging our understanding of the genetic basis of cancer. And it has enabled us to counsel the avoidance of many dietary practices and environmental hazards associated with the onset of cancer.

But where do we go from here? Much, of course, remains to be learned and, alas, scores of thousands of people still require treatment. Those are the *raison d'être* of institutions like the Norris Cotton Cancer Center.

In 1986, the National Cancer Institute published a detailed strategy designed to reduce by 50 percent by the year 2000 the incidence of mortality from cancer. The plan called for the coordinated deployment and vigorous application of existing knowledge about cancer prevention, detection, and treatment. It is too early to tell if those goals will be met. But we do know that the effort must continue.

Just a year ago, a number of the nation's leading scientific authorities told Congress that despite the expenditure of more than \$23 billion since President Nixon committed the nation to a war on cancer in 1971, cancer was still on the rise (in fact, it threatens to soon surpass cardiovascular disease and become the nation's leading cause of death). They asserted that half of all cancer patients could be cured if their tumors were discovered early enough. The report of these researchers, titled "Cancer at the Crossroads," called for the appointment of a cabinet-level official to coordinate the nation's cancer efforts; for universal access to state-of-the-art medical treatment; for addi-



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tional funding to move laboratory discoveries into clinical trials; and for enlarged programs in cancer-prevention education.

The report emphasized that basic research of the kind carried out at the Norris Cotton Cancer Center is an essential element in our national strategy to improve the prevention, detection, and treatment of cancer. That message is especially important at a time when the budgets of federal agencies are threatened with reductions. If these reductions in funding do occur, they will diminish the capacity of the nation's cancer centers to carry forward the kind of basic research and clinical trials that have led to so many scientific advances in recent decades.

The Clinton administration's budget for fiscal 1996 provides only modest increases in funding for scientific research, and its projections for fiscal 1997 propose reductions in such funding. These prospects become more ominous when one considers that, even at the present time, government science agencies are compelled to deny funding to more than three-quarters of the grant proposals they receive from university-based researchers.

Dr. Harold Varmus, director of the National Institutes of Health, recently said that "the prospects for capturing the clinical benefits of our new knowledge are threatened by the nation's financial straits, by the deterioration of the scientific infrastructure, and by the tensions in the scientific community [caused] by intense competition for support."

Capturing the clinical benefits of which Dr. Varmus speaks and extending our scientific understand-

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A Place on the Plain

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committed to diversity in education and continuing to increase the numbers of students," says Regan-Smith. "Whether affirmative action legally in the U.S. stays the same or changes, that commitment is here, no matter what." The reasons have a lot to do with the enrichment of everyone's experience at DMS.

"A woman from South Africa who spoke here said that in her country, the white child's education was less than it could have been as a result of apartheid," Regan-Smith recalls. "I had always seen it the other way around. The comment was so startling to me. Over the last decade I've come to believe that our learning is limited if the group we learn with is just like ourselves. This year, we have 10 minority students out of an entering class of 91 — we try to have diversity of other sorts also — and they bring much more to us, the homogeneous majority, than we could ever give to them."

Today's students, of course, have grown up with affirmative action. George Margolis, a now-retired professor of pathology, was among those who believed in its benefits to the majority back in the 1970s, when it was a new thing to have minorities in medical lecture halls and labs. He pushed for minority enrollment and remained a friend and mentor to many minorities who came to DMS then.

As recently as 1985, he wrote: "A large proportion of traditional Dartmouth medical students come from a socioeconomic background which offers no meaningful relation to minority populations and exposure to minority culture. . . . Therefore, it is not an extravagance to state that DMS has a greater need for minorities than they have for it."

Following in the footsteps of the 21 Native Americans who have already graduated from Dartmouth Medical School and of the three current upperclass students are two in this year's entering class — David Fry, a '95 graduate of the University of Arizona, and David Bivens, a '95 from the University of Oklahoma. In some ways, they are still "missionaries" — although not in the sense that Eleazar Wheelock saw the American Indians in the early years of the College's history. Then, they were from the Six Nations and other regional tribes, learning along with poor farm lads of New England to spread the gospel to tribes in the Northeast. Wheelock's vision was to make peace rather than war with the Indians. Trouble was, the

learning was all one-way. The effort was solely to make the Indian people more like whites. Today, however, Native Americans and other minorities can be themselves and share whatever is distinct and unique about their experiences with others.

This year, as every year, DMS admissions officers will attend minority graduate school fairs around the country, getting out DMS's message that this is a good place to come. Martha Regan-Smith will point out to Native Americans with acceptable MCAT scores that Dartmouth has historical connections with their people and that DMS has an outstanding record of graduating Native American physicians. She will let them know that DMS also has clerkships in places where they can have contact with minority patients — including with Native Americans at IHS clinics and hospitals in Bethel, Alaska, and Tuba City, Okla. In fact, these clerkships are so popular with all students that usually a third of each third-year class chooses to go to one of them as part of their clinical education.

There again, a Native American presence in medicine is not just something for Native Americans. It's something for everyone. ■

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ing of cancer have the highest possible claim to be an essential part of the nation's agenda. This is not an instance of special pleading by academic medical centers for resources that some might believe would be better devoted to other social problems. This is a plea — at a moment of unprecedented scientific opportunity — for attending to the quality of national life and to the health of millions of American citizens. It is an opportunity to diminish the size of the shadow that cancer casts over our society and over our spirits.

As Dartmouth-Hitchcock Medical Center celebrates the dedication of a new building that is devoted to cancer prevention, care, and research, I trust our nation will rededicate itself to finding new understanding of the causes and new forms of treatment for cancer and full support for the scientific effort involved. The work is too important to us all to be permitted to falter or fail for lack of a vigorous national commitment. ■



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