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Science and Emotion Are Compatible: A Tribute to Robert L. and Lillian H. Brent!

Number 10

March 5, 1990

A great deal has been written in recent times about the impersonal nature of the scientific literature. In an oft-quoted aphorism, Sir Peter B. Medawar, cowinner of the 1960 Nobel Prize in physiology or medicine, succinctly termed the literature "a fraud."¹ Scientific papers, with their cold, detached recitation of procedures and data, often misrepresent or completely omit the processes of thought (and the blind alleys) that accompanied or gave rise to the work. In the rush to publish and assimilate ever-increasing amounts of research, this shortcoming is often lamented but rarely addressed. Scientific discoveries, however, are always influenced by human emotions and personal perceptions, and it cannot be otherwise.

Whether or not there is room for *feelings* in scientific discourse—especially in the format of a published paper in a scientific journal—may be an arguable point, but feelings are undeniably important in our personal and professional lives. This essay is not the forum to explore why the public expression of feelings seems to be regarded as appropriate for the novelist, say, or the features writer of the local newspaper, or even the politician—but not for the scientist. But I hope that the growth of scientific autobiography² will provide scientists greater opportunities to express themselves and to show themselves as other than cold, exclusively rational and logical creatures—like the character Mr. Spock in "Star Trek."

My friend Robert L. Brent has never had much difficulty about expressing his feelings. He is the Louis and Bess Stein Professor of Pediatrics and chairman of the department, and professor of anatomy and ra-

diology at Jefferson Medical College, Thomas Jefferson University, Philadelphia, Pennsylvania. Last October, at a celebration of his 35 years at the college, he spoke eloquently about his childhood, the mentors in his life, and his family. The entire occasion was a moving experience for the hundreds of friends and colleagues present.

Seventeen months earlier, Bob gave a graduation address on a related theme at the University of Rochester, New York. Like the presentation at Jefferson University, a main theme of his talk was his urging the audience to attempt to strike a balance between professional aspirations and extraprofessional relationships (such as one's family and friends). Having read a transcript, I find that there is one section of his graduation address that still echoes in my mind from time to time: "I urge you to invest much of your energy into your personal lives. There is no perfect marriage and no perfect interpersonal relationship. These relationships improve with the effort to understand each other's views and respect each other's feelings. For remember that feelings are never wrong. Feelings are never wrong."³

Robert L. Brent: A Short Biography

Bob Brent is the foremost authority in the world on the effects of radiation on the human embryo and on the causes and prevention of congenital malformations. His research specialty is teratology—that division of embryology and pathology dealing with abnormal development leading to deviations from the normal body conformation or

structure. Bob has continued these studies over a period of 40 years, applying this information into a practical method of evaluating radiation risks to the embryo, with the majority of his over 200 published articles expressly on this subject. He has given over 800 lectures to universities throughout the world and has served as a consultant to numerous industries, governmental agencies, and foreign countries.

Robert L. Brent was born in Rochester, New York, on October 6, 1927. He received his AB degree from the University of Rochester in 1948 and his MD (with honors) from the University of Rochester Medical School in 1953. In 1955 he was awarded his PhD from the University of Rochester Graduate School in the area of radiation biology and embryology.

Bob's early research history clearly reflects his interest in radiation biology. He was a research associate at the University of Rochester in the Department of Genetics and Embryology for the US Atomic Energy Commission project during the years 1947-1953. From 1955 to 1957 Bob was chief of the Department of Radiobiology at the Walter Reed Army Institute of Research, Washington, DC. His continuing association with Jefferson Medical College began in July 1957, with his appointment as associate professor of pediatrics. Currently serving as professor of pediatrics, radiology, and anatomy and as chairman of the Department of Pediatrics, Bob was appointed distinguished university professor last year.

Some of Brent's awards and honors include election to Sigma Xi in 1954; the Richie Memorial Prize in Obstetrical and Gynecological Research in 1953; the Career Award, National Institutes of Health, in 1962 (this was relinquished when he became chairman of pediatrics at Jefferson); the Christian R. and Mary F. Lindback Foundation Award for Distinguished Teaching, 1968; and selection as a Royal Society of Medicine Travelling Fellow, Marshall Laboratories, Cambridge University, UK, 1971-1972. He has also been a sponsored lecturer in the Far East by the Japanese Ministry of Health, the Yondata Corporation,

and the Japanese Teratology Society in July 1983; and by the Bureau of Health of the People's Republic of China and the United Nations World Health Organization in a series delivered in the cities of Taiyuan, Qin Huang Dao, Tianjin, and Beijing in May 1986.

Brent has used his expertise to deal with medicolegal issues in medicine and, in particular, in the field of birth defects. He is an authority on the role of the expert witness in the courtroom.⁴⁻⁷ His writings on the litigation crisis and its causes and solutions have made him a prominent spokesman and frequent lecturer on medicolegal matters. A case in point was his involvement with the Bendectin controversy during the 1970s and 1980s. Bendectin was a drug used by pregnant women to control morning sickness, and its use occasioned a spate of lawsuits alleging that the drug caused birth defects. Bob was instrumental in showing that the alleged teratogenicity of Bendectin had no scientific basis.⁸⁻¹⁰

Bob's research work over the years has uncovered many of the mechanisms that cause teratogenicity. Indeed, he and his teams found indications that the first day of embryonic development is the most sensitive stage to embryotoxic agents—not only for radiation, but for other environmental drugs and chemicals.¹¹⁻¹³ It should be said here that Bob is a strong advocate of the use of animals in medical research and that many of his important discoveries and breakthroughs in the field of teratology¹⁴⁻¹⁹ would not have been possible without animal experiments. The results of his animal research frequently take Bob from the bench into the field of health policy; for example, his work proved the lack of teratogenicity of progestin-like drugs in producing congenital heart disease and limb-reduction defects.^{20,21} Without the use of animal models in his research, many children would not have benefited and instead would have been needlessly denied a chance at life.

Since overexposure to radiation during pregnancy may be an indication for terminating a pregnancy, an informed decision to do so often requires a consultation with spe-



Robert L. Brent

cialists like Brent. He has counseled over 2,000 women from all over the world, many with radiation exposure, and in most instances has reversed other physicians' and counselors' recommendations that pregnancies be terminated—thus literally saving hundreds of babies from unnecessary abortion. At the dinner in his honor, we were addressed by the mother of a daughter he had saved from a therapeutic abortion. It is ironic that Bob should admonish us never to let patients or experiments interfere with our family commitments, since he has managed to combine a flourishing family life with a career that has afforded him not only the respect of his peers, but the adulation and gratitude of thousands of patients throughout the world.

I had never known that Bob has saved so many lives of pre-born individuals. Rather, I thought of Bob as the ultimate expert on teratology, since he serves as the editor of the journal of that name. *Teratology* was founded 22 years ago and has fulfilled the expectations of all concerned. Speaking of the journal—Bob has been elected three times to the post of editor-in-chief and has

helped make that journal one of the top 10 most-cited journals in the field of developmental biology and the premier journal in the field of experimental teratology.

Along with teratology, medicolegal issues, and the responsibilities of scientists to their families, another of Bob's concerns is with alcohol and smoking addictions. He has pursued with vigor no-smoking policies and has widely published warnings for the hazards of both tobacco and alcohol.^{22,23} He firmly believes that legal addictions are the forerunners to illegal addictions and that both types of addiction can be harmful to the fetus.

Bob has had a direct connection with ISI[®], having assisted in developing and writing the program for the *Research Alert*[™] (formerly *ASCA*[®] and *ASCATOPICS*[®]) search program for the topic of teratology.²⁴ The topic of teratology and its connection with thalidomide was discussed in a previous essay.²⁵ In the public's mind, thalidomide was the ultimate expression of the problem of abnormal fetal development induced by an external environmental influence.

Last May, Thomas Jefferson University and the Alfred I. duPont Institute, Wilmington, Delaware, announced the formation of a partnership for the development of expanded pediatric programs in patient care and for research education for medical students, residents, and practicing physicians.²⁶ Bob was named director, *Division of Developmental Biology*, at the institute. For over a year now, he has been visiting the institute twice a week as part of the agreement between the two organizations.²⁷ His expertise will no doubt be an asset in the expansion of pediatric research at the facility.

In the reprint that follows,²⁸ Robert and Lillian H. Brent have written an article that expresses beautifully sentiments that apply not only to physicians, but to all scientists and scholars. Lillian received her BS in English at the University of Rochester and her ME in the psychology of reading at the Temple University Laboratory School. She has been a reading specialist in the Abington, Pennsylvania, school system for 20 years.

Subsequent to this paper's publication in 1978, the themes expressed have been expanded into the most popular elective course at Jefferson Medical College under the title "Personal problems of physicians"—a 10-week course given to sophomores. The

paper's message is still immediate and appropriate.

* * * * *

My thanks to Peter Pesavento for his help in the preparation of this essay.

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Medicine: An Excuse from Living

This physician and his wife have a message of importance for students and their families and to all physicians who use their profession as an excuse for neglecting the more important things in life. Although the talk has been delivered by the physician, the content is a culmination of interactions between both authors.

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Reading Teacher, Abington, Penn.

In the following article, Robert L. and Lillian H. Brent explore the necessity of balancing one's professional aspirations with the just-as-important interpersonal relationships with family and extraprofessional friends. The Brents' assessment is that the scientist's family should have priority over the profession.

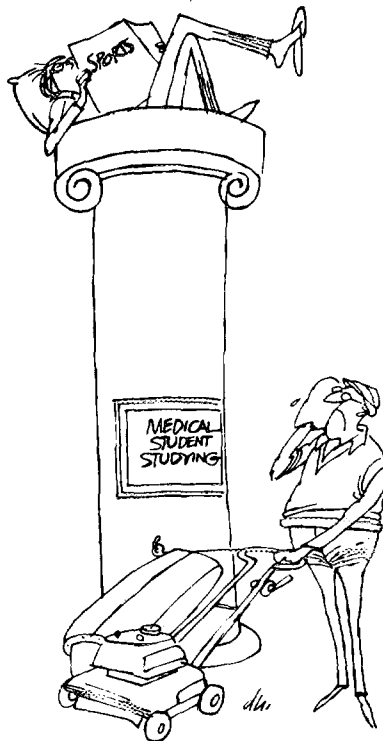
□ Each year since 1966 I have addressed the first year medical students at the Jefferson Medical College during Orientation Week with a presentation entitled "Medicine: An Excuse from Living," and each new class has heard variations on that theme. Interestingly, for the first several years I had difficulty with the title: the students listed it erroneously on the program as "Medicine: An Excuse *for* Living." Apparently, it was difficult for them to accept or believe the real title.

In spite of the maturing experience that medical education offers medical students, some slip through untouched. I have received many interesting comments about this presentation from both students and physicians. One physician informed me that I did not understand the role of a good physician, for his best friends were his patients. This statement was a reflection of his own serious family problems and an exploitation and distortion of the doctor-patient relationship. A student visited me after the freshman orientation somewhat disturbed, because he had come to medical school prepared to "sacrifice" his life to the profession and he was quite unprepared to hear a faculty member tell him that there were other, more important things in life. After minimal contact with this student, there was no doubt that he needed emotional counseling.

The most positive response has come from the wives of physicians. One wife told me that she placed a summary of this talk on the bulletin board of her kitchen. Her physician-husband was outraged and immediately dispatched the summary to the trash can.

It is sad to observe how so many physicians have tormented personal lives when they, more than anyone else, should be able to obtain the greatest rewards from their own interpersonal relationships.¹⁻⁵

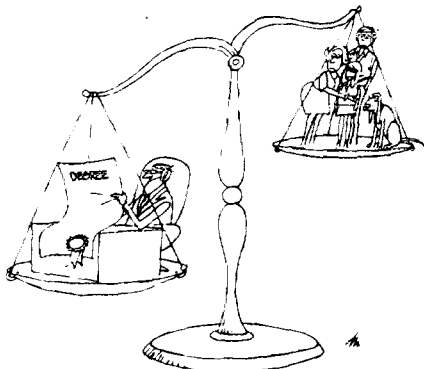
Every year I tell the medical students that the presentation is directed to the wrong audience.



(Illustrations by David W. Harbaugh)

Parents may become overprotective of the student and overlook indiscretions or failures to contribute to the family because he "has to study."

It really should be directed to the students' parents, spouses, and children, for it is because of responsibilities to them and their needs that a physician may exaggerate certain aspects of his professional life to the detriment of his family. Furthermore, other members of the family unit would be much quicker to perceive that the adoption of some of



One of the benefits of being a physician can become a liability to the family.

these concepts [is] essential for their growth and survival and they will have a greater willingness than the students to alter the style that is adopted for one's professional life.

It is interesting that one of the benefits of being a physician can become a liability to the family. For the M.D. degree provides:

- Intellectual stimulation
- Flexibility and independence
- Maturing educational experience
- Choice of locale and position
- Excellent financial compensation
- Direct service to people in need

With a large number of prospective physicians, trouble begins with this last asset, namely, *Being of Service*. For some individuals, being of service can become a mechanism of escaping from very important responsibilities, namely, the responsibilities to one's parents, spouse, and children. I am certain that many of the students entering medical school consider their professional responsibilities to be the most important part of their lives. Furthermore, many of the parents of medical students have reinforced the concept that the study of medicine has first priority in their households. This is where we shall disagree, for the thesis that I put forth is that *becoming a good doctor is, relatively speaking, an egocentric although respectable goal, and that the most difficult and most important accomplishments in life are the development of giving relationships with other human beings, be they spouse, parents, children, or friends.*

If you compare the rewards of developing mature personal relationships with the attainment of excellence in the medical profession, certainly the rewards are greater and quicker from one's profession.^{6,7} I firmly believe in devoting significant

time and energy to the development of mature interpersonal relationships, in spite of the meager recognition and long-term rewards; when things go wrong at the interpersonal level, the anguish and heartache are measurably greater than you will ever experience from disappointments in your profession. There is no comparison between not obtaining a desired internship, failing to make AOA, or not receiving an award and going through a divorce, having a runaway child, or seeing indifference, anguish, hate, or disrespect in the eyes of one of your grown children.

Knowing that your spouse or child has love and respect for you is a reward that is unequalled. To emphasize this point, I apologize for using a very personal experience.

My eldest son graduated from medical school and his first assignment as an intern was on the pediatric intensive care unit. During the first week in July, five children died in that unit, several of whom were his own patients. July 9th is his mother's birthday and he sent her the following poem from 2,000 miles away:

What gift can I give you
On this birthday? You have
Pain in your shoulder. In
Darker moments you have
Sighed and said
Two-thirds of my life are over

Your children are scattered
Your womb gone. Nature's trick
So strong in you to gather
And protect, nurture and
Help us bloom like flowers
Yet now, in your Indian Summer
We seem to turn from yellow dandelions
To white, evanescent hairs
Emanating from a seed
Floating where?
Where has your love, your tears
That caring water gone?
Swallowed by a hungry
Seemingly ungrateful earth
The sunlight of your warmth
May seem at times reflected back
Unfelt, unchanged

And yet, did you know
That when I put my hand
On a crying child's head
Whispering ssssh
It is you whispering softly
Rocking him close to my chest
That love that I feel for a wide
Eyed baby that I never saw before
That is your love for me



For some physicians, being of service can become an escape from the important responsibilities to parents, spouse, and children.

This I can take anywhere, and
Give anytime so filled am I
With this love. I am so grateful

If you take this, my thanks
For your birthday gift
I hope that it will give you
Some peace. It has for me.
Love, David

I believe the poem speaks for itself: the nurturing of responsible and loving interpersonal relationships yields rewards that are immeasurable, unequalled.

How does the profession of medicine become number one in an individual's or family's list of priorities? It is easier in medicine than in any other profession. Lay individuals, including the families

of medical students and physicians, place the care of the sick in a special category. In all likelihood, this special pedestal for medicine is a projection of one's own concern over his health. Parents may become overprotective of the student and overlook indiscretions or failures on the part of the student to contribute to family functions because he or she "has to study." Everyone has to be quiet because Melvin is studying. Melvin's father cuts the grass because Melvin is studying. Soon Melvin learns he can get out of anything because he is studying. Melvin's wife gives up her education, recreation, friends, and vacations because Melvin is interning. But even more importantly, their interpersonal relationship fails to mature because he is immersed in his training.

The children may never see him at dinner hour, at their school concerts, or at parents' night. But children have ingenious methods of paying back parents for lack of concern and love.

Little by little, with everyone bending and twisting their lives so that Melvin can become a doctor, he intuitively learns that his studies and medical responsibilities can be used to defer other responsibilities, whenever and wherever he chooses. Some physicians will use their indispensability to patients as a *way of life* and the loved one can be made to feel guilty about taking the doctor away from a sick patient. It's a rare family that will have the assertiveness to place their needs above the life or well-being of a patient.⁸ The exploitation of *guilt* is the physician's method of suppressing the goals, aspirations, and needs of other members of the family unit. Here are some examples that anyone can recognize:

- *Physician Dawdler*—He is in the hospital coffee shop two or three times each day and is seen frequently talking in the halls, but never gets home

Evaluation of Personal and Professional Goals

	Mature Interpersonal Relationships	Excellence in One's Profession
Nature of relationship	Primarily giving	Primarily narcissistic
Rewards	Primarily long term, if any	Multitude of short term-prizes, honors, money
Recognition	Meager	Exaggerated (personal and community)
Importance	Key to progress in any culture	Important
Impact when things go wrong	Overwhelming-anguish, heartache	Disappointment
Importance of responsibility	Primary	Important, but may be a mechanism for escaping one's prime responsibility

Table 1

before 8 P.M. (because he doesn't really start working until 4 P.M.). He doesn't want to be home and he has the perfect alibi—he is saving lives.

- *Electronic Pediatrician*—A real physician who established multiple electronic devices so that he would be on call 24 hours each day, seven days a week. He is telling his family where his priorities are.

- *The Out-of-Town Academician*—He can never refuse a speaking engagement and magnifies the importance of each commitment that takes him away from his primary professional and family responsibilities.

There is no simple answer for the overcommitted physician and his family. There are several reasons why a physician will choose this path, but most of them involve deep-rooted personality characteristics which are not changed by one lecture or article. One might ask, "Are there any preventive measures?"

Somewhere early in our development as physicians, the matter of family vs profession has to be considered and dealt with. This can be done through frequent discussions between family members where everyone's needs are evaluated, considered, and appropriately satisfied. Let's put it another way: not only are all physicians created equal, but spouses and children, too.

I am sure there are some of you who would be willing to debate the stand that I have taken, i.e., that the family should have priority over the profession. Others will consciously agree yet uncon-



Knowing that your spouse or child has love and respect for you is a reward that is unequalled.

The Authors

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Lillian H. Brent, B.S., M.E.

Dr. Brent received both his M.D. and a Ph.D. in Radiation Biology and Embryology from the University of Rochester where he was also a Research Fellow at the National Foundation for Infantile Paralysis. From here he went on to Clinical Fellow and intern in pediatrics under the National Foundation for Infantile Paralysis at Massachusetts General Hospital. He serves as Professor of Radiation Biology and Anatomy, and is Director of the Stein Research Center, all at Jefferson. He has been Consultant to the NHI and the FDA and is Editor of *Teratology*. Dr. Brent has contributed over 200 publications to the literature in the field of Radiation Biology, Embryology, and Clinical Pediatrics.

Mrs. Brent received her B.S. in English at the University of Rochester and her M.E. in the Psychology of Reading at the Temple University Laboratory School. She has taught reading at private schools and for the past six years has been a reading teacher in the Abington school system.

sciously place prime emphasis on their professional lives. However, you cannot disagree that the family should establish realistic goals for *all* its members. Included in these goals should be the highest professional goals. There is no reason why the goals of the entire family cannot be satisfied; this cannot and will not materialize without the realization that they exist and without constant communication among all members of the family.

It is for all of us to constantly evaluate the direction of our efforts, making certain that neither family nor professional responsibilities are neglected. Good luck to all of you in achieving this delicate balance for no one should have an excuse from living. □ □

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