

The Newsletter of THE AMERICAN INSTITUTE OF STRESS

Number 5, 1988

Deep-Throat Stress

The term Post Traumatic Stress Disorder is most often used in connection with problems experienced by survivors of violent events. The classic example is the Vietnam veteran who is haunted by repeated flashbacks of his war experiences. In a recent two million dollar lawsuit, however, a St. Louis woman claimed that she was suffering from this disorder as a consequence of just watching 16 minutes of the X-rated film *Deep Throat*. According to the court records, the plaintiff, who was a medical supply company representative, appropriately attended a business conference in the office of a hospital administrator. However, immediately after the meeting was concluded, the film was shown. The shock of the experience allegedly left her "unable to have sex or even do daily chores" and resulted in "grievous emotional shock and mental distress . . . and loss of employment and job opportunities." Despite the fact that a psychiatrist confirmed she was suffering from Post Traumatic Stress Disorder, the court rejected her claims for damages. In commenting on the case, another psychiatrist stated that this syndrome tends to lessen over time, noting that "some people spend their energy on getting retribution with lawsuits rather than getting rid of their symptoms."

ALSO INCLUDED IN THIS ISSUE

Biological Clues to Post-Traumatic Stress	2
Job Stress Claims Clog Compensation Court	2
The Stress of Medical Training	3
Type As Often Stuck in Middle Management Positions	3
How Does Exercise Reduce Stress?	4
Are the Benefits of Exercise More Mental Than Physical?	4
Too Stressed for Stress Reduction Program	5
The Effects of Stress Reduction on Coronary Risk Factor	5
Heart Deaths Highest in Northeast States	6
Type A Behavior and Sudden Death after a Healed Heart Attack	6
Does Laboratory Blood Pressure Reactivity Predict Responsiveness to Daily Stress?	6
Anger, Blood Pressure and Death	7

Type A Toddlers

Some Type A researchers believe that the problem begins at an early age. Type A heart attack patients consistently reveal feelings that one or both parents never loved them when carefully interviewed. Typical Type A traits such as extreme competitiveness, aggression and low anger thresholds can be detected even in preschoolers. In one recent study, Type A behavior was evaluated in some 150 boys and girls between the ages of 3-1/2 and 6-1/2 who were enrolled in three preschools. Type A behavior was evaluated in terms of tendency to interrupt others or to be very competitive in play activities. The children were then taught a relaxation as well as a memory game during which blood pressures were measured repeatedly with an automatic device. After the relaxation game the children were "stressed" with the memory test. Those children scoring high as Type As displayed no significant difference in blood pressure from others when they were in a relaxed state. However, there was a significant rise in systolic blood pressure in Type A's during the memory game. The researchers will now continue their study to determine whether or not this behavior persists or intensifies as Type A children get older and if it is predictive of a higher incidence of cardiovascular disease in later life. More importantly, this prospective study will attempt whether attempts to reduce Type A behavior can successfully prevent adverse cardiovascular consequences.

For further information on the original source of abstracts and other reprints available on similar subjects, please send a self-addressed stamped envelope to: Reprint Division, American Institute of Stress, 124 Park Avenue, Yonkers, NY 10703.

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The Newsletter of
**THE AMERICAN INSTITUTE OF
 STRESS**

Paul J. Rosch, M.D., F.A.C.P.
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Biological Clues to Post-Traumatic Stress

Post Traumatic Stress Disorder is a major problem for many Vietnam veterans. It has also been estimated to affect hundreds of thousands of survivors of battles, airplane crashes, earthquakes and other catastrophic events. The condition is characterized by sudden recurrent memories of traumatic events that are so vivid that the individual actually thinks and feels he is going through the stressful event all over again, even though it is years in the past. Such victims often tend to avoid close relationships and frequently suffer nightmares and periods of extreme emotional distress. Psychotherapy and drug treatment are often of limited value. Some individuals appear to be more susceptible than others and researchers are trying to discover how to explain such differences. Laboratory animals exposed to repetitive stress in the form of electric shocks become increasingly insensitive to pain, presumably due to the release of endorphins, which are natural pain killers. If the animals are given naloxone, which blocks the action of endorphins, pain sensitivity returns. The same phenomenon has also been demonstrated in humans exposed to repeated electric shocks. Similarly, Vietnam veterans with Post Traumatic Stress Disorder were less sensitive to pain after watching 50 minutes of an ambush scene from the Vietnam movie "Platoon." Heat was applied to the forearm before and after the film and the veterans were asked to rate the pain on a scale of 1 to 100. The

results were compared with the findings of a control group of eight Vietnam veterans without the disorder. Six out of eight veterans with Post Traumatic Stress Disorder showed an average of 30% decrease in pain sensitivity after viewing the stressful scene when they were given a placebo, showing that stress did reduce their pain. However, when naloxone was substituted, this resistance to pain was completely blocked. In the control group, no change in pain sensitivity was evident in seven out of eight as a consequence of the film, even when a placebo was administered. It is not clear whether endorphin release plays the major role in determining susceptibility to Post Traumatic Stress Disorder. However, the findings do suggest that some basic biologic differences may serve as predisposing factors, and could be useful in identifying individuals prone to this problem.

"Doing what we like is freedom; liking what we do is happiness."
 — Anonymous

Job Stress Claims Clog Compensation Court System

The dramatic rise in Workers' Compensation claims for job stress is attracting increasing concerns, particularly because so many of the suits are for injuries which are "invisible." A prime example was cited in a recent *Wall Street Journal* article about a successful suit won by a cake decorator working in a grocery store. She claimed that "a new bakery-department manager trimmed her hours and used blunt language in evaluating her work. "She left, stuttering, depressed and fearful of crowds." Workers' Compensation premiums for on-the-job injuries were \$35 billion in 1987, double the 1980 level. The actual total cost to industry was probably billions of dollars higher, when one considers the additional expenses resulting from absenteeism, diminished productivity and increased employee turnover. As one former California Workers' Compensation judge noted, "the system was well-equipped to handle an injury that you could see. With these fancy new theories, the system is starting to break down." In California, premiums nearly doubled between 1982 and 1986 and as a (continued on next page)

Job Stress Claims Clog Compensation Court System *(continued from page 2)*

consequence the court system is now nearing gridlock. According to a state watchdog group, the rate of reported industrial accidents is actually falling, but "new fangled illnesses, including mental-stress, may strain the system to the breaking point." In 1986, California employers ran up to close to one billion dollars in legal and medical bills alone — more than most states spend on actual benefits in a year. Part of the problem is getting qualified medical experts to testify in an unbiased fashion. "In all of San Francisco only two orthopedic doctors are acceptable as expert witnesses to both sides of the Workers' Compensation bar; one way or another, all others are considered biased." These two physicians are booked for a year in advance causing staggering delays in orthopedic suits. In addition, despite the fact that claims have tripled over the past twenty years, the number of judges has remained constant over this period of time. In fact, one judge has become a beneficiary himself, after claiming "stress from the heavier workload triggered a stroke." Plaintiffs' attorneys usually carry 300 clients or more and advertise in the papers with ads such as "Injured or Harassed at Work? Call the Work Trauma Hot Line." One judge who recently heard twenty-five cases in a morning session said his court was "like a supermarket." Stress claims in California rose 531% to nearly 7,000 annually between 1980 and 1986. 75% of these claims were for "job pressures." By comparison, total Workers' Compensation claims rose less than 10% during the same period.

The Stress of Medical Training

Medical interns and residents traditionally have to work long stressful shifts as part of their post-graduate hospital training. Concerns have been expressed that this may cause undue fatigue and disruption of normal body rhythms adversely affecting performance and decision-making capabilities. This issue has recently resurfaced in a variety of malpractice suits, prompting some states, such as New York, to enact corrective legislation. While a variety of surveys have indicated that lack of sleep and fatigue are major stresses for residents, that appears to be only part of the problem. Other major contributors to the stress of medical training are related to interference with social support systems, particularly in women and residents who are married. While a greater incidence of depression has often been cited as the major emotional problem associated with post-graduate medical training. It now

appears that increased anger may be the predominant disturbing change in mood. This could seriously affect the quality of patient care. However, there are very few good studies in this area and considerably more research in this area is required. Despite the important significance of the overall problem, there has been a relative lack of interventional attempts through counseling, despite the ready availability of such resources. Most programs recognize the need for establishing effective support groups. Unfortunately, those who "are most in need of help were usually the ones least likely to seek it." The number of residents who drop out for "personal reasons" each year is equivalent to the graduating class of a moderate size medical school. The major challenge appears to be in finding creative ways to modify existing programs without compromising patient care. The causes and sources of stress during residency training are complex and involve a variety of personal and professional issues. However, most of the accumulated evidence suggests that strong social ties provide the best buffer and that increased efforts should be directed towards encouraging group activities as a partial solution to such problems.

Type A's Often Stuck in Middle Management Positions

In general, the population is split 50-50 between Type A's and Type B's. However, nearly four out of five middle managers are Type A's although the percentage of Type B's begins to increase again as senior management levels are reached. According to a recent *Wall Street Journal* article, the reason for this is that Type A's work well when alone, usually emphasizing speed rather than judgment or quantity rather than quality of work. On the other hand, senior managers are forced to slow down and to take more time in arriving at decisions because the problems are often more complex. One mental health consultant believes that Type A's tend to "self-destruct" at upper levels stating that "Their driving compulsive personality succeeded in getting them to a certain place, and now they are driving others the way they drive themselves." One classical Type A example was a "very inflexible, very driving, very domineering, very controlling" manager. As is often typical, he could not conceive of "how anyone could do their job successfully in a way different from the way he did it." As a consequence, he alienated and antagonized those around him so much that "top-notch salespeople began leaving en masse." Most job stress authorities agree that the major problem is often the person-environment fit, rather than problems stemming from the individual or the nature of the job itself.

How Does Exercise Reduce Stress

Many individuals exercise to feel better emotionally or psychologically, as well as physically. Some reports claim that exercise can reduce symptoms of anxiety and depression. Simply staying fit seems to help reduce stress. Conversely, exercise may actually be stressful for others, judging from the pained expressions on the faces of many joggers as they vigorously pursue their daily plodding. A major question is how much and what kind of exercise is best to reduce stress. Physiologists tend to study aerobic exercise such as running. On the other hand, psychologists are more apt to be preoccupied with the effects of anaerobic exercise such as progressive muscular relaxation techniques. A recent study attempted to determine the effects of aerobic exercise on stress reduction by studying the relationship between fitness level and autonomic reactivity to stress in men between the ages of 20 and 50. Before beginning a nine-week exercise program, the men were divided into three groups: a trained group who had been long-standing participants in an advanced YMCA fitness program, a trained group who had begun such fitness classes a month before the study began, and an untrained group who did not engage in any regular physical activity. Heart rates and electrodermal reactivity to various laboratory-induced stressors, such as solving mental problems, were compared. Initially, the aerobically fit group recovered faster after exposure to such stressors. The unfit group did not react more strongly to the stressors but took more time to recover from their effects. The aerobic conditioning achieved by the untrained men also proved to increase their speed of recovery from stress by the end of the study period. Initially, the heart rate recovery times of this group approximated those of the untrained men, but after nine weeks of exercise had approached that of the seasoned exercisers.

In another study, heart rate and self-reported arousal levels and biochemical changes were compared in highly trained and untrained men who were asked to perform arithmetic problems while being exposed to irritating background noise. Again, the heart rates of the trained individuals returned to normal more rapidly and they also reported lower levels of anxiety. This suggests that aerobically trained individuals may be better able to recover psychologically as well as physiologically from emotional stress. Another approach to the problem utilized a Holmes-Rahe approach which proposes that illness is more likely to occur a few months after periods of high-life stress. The subjects filled out a questionnaire about changes which had occurred during their life during the previous 12 months and kept a nine-week record of all of their health problems. They also recorded psychological symptoms such as anxiety and alienation. Fitness levels were obtained using submaximal

bicycle ergometer testing. Students who reported high levels of antecedent stress subsequently had more physical health problems if they had a low level of fitness. On the other hand, stress seemed to have little effect on the health of subjects judged to be fit. The reason for this is not clear but may be related to possible beneficial effects of regular exercise on immune system function and the secretion of endorphins and other humoral agents which affect mood and behavior. Others point out that aerobic exercise is often associated with a lowered heart rate and blood pressure and thus blunts the usual elevations in these measures of cardiovascular fitness caused by stress.

"Genius is the highest type of reason — talent the highest type of understanding." — L.P. Hickok

Are the Benefits of Exercise More Mental Than Physical?

While anaerobic exercise has not been studied as extensively, some reports suggest that an anaerobic exercise program can reduce stress just as effectively as aerobic training. In several studies of anaerobic exercise versus aerobic exercise, there was no significant difference in induced levels of stress responses in terms of blood pressure or heart rate increases. Thus, it seems that any kind of regular physical fitness program may serve as a buffer against stress. It may be that exercise and fitness provide benefits because they alter the way we perceive stress. Another buffer may result from the social support which occurs when people exercise in a group setting such as a health club, aerobic dancing classes, or various sports activities. One researcher believes that this is the key factor and that "some people might get the same stress-reducing effect by playing tiddly winks." However, exercise should not be considered a panacea for stress. For highly competitive individuals, who constantly strive to improve prior distance or time records, or who are extremely competitive, exercise could prove lethal. Another source of concern has to do with stress-related exercise injuries. High levels of life stress appear to increase the incidence of accidents and injuries as demonstrated in one study of non-contact college sports injuries. Athletes responded to a 70-item questionnaire about events in their life during the previous 12 months with a view towards quantifying the degree of negative stress experienced. There was a high correlation between the frequency although not necessarily the severity of injuries sustained. This was most evident for track and field athletes who require high degrees of effort and concentration which could be readily disrupted by disturbing life stress influences. The important buffering effect of social support systems is also (continued on next page)

Are the Benefits of Exercise More Mental than Physical?

(continued from page 4)

evident in another report which examined the effect of both "nontechnical" support given by family and friends and "technical" support given by coaches and teachers. Those athletes who had higher social support scores had a lower frequency of injury—even when they had high negative life stress scores. From all the above, it is clear that exercise can have important stress-reducing effects. However, such benefits may relate not primarily to anaerobic or aerobic conditioning itself, but to a variety of associated psychosocial factors which accompany such activities.

Too Stressed for Stress Reduction Program

The following is reprinted in its entirety from the June issue of *American Family Practitioner*.

The director of a health management consulting firm arrived at one company's offices to conduct a stress seminar only to find that no one had shown up. Long after the appointed starting time, a harried executive rushed in to explain that the seminar would have to be canceled: Everyone at the company was under such pressure to get work done that no one could take the time to attend, according to *Changing Times*.



The Effect of Stress Reduction on Coronary Risk Factors

Some authorities believe that the standard risk factors, cigarette smoking, hypertension, and high cholesterol do not necessarily cause coronary heart disease but are primarily associated findings. Treating hypertension lowers the incidence of strokes and stopping cigarettes markedly reduces lung cancer and emphysema. However, there is little evidence that either of these activities influence heart attack rates. There seems to be little doubt that reducing cholesterol levels over 280 in young males is beneficial. However, elevated cholesterol risk seems to disappear after the age of 50, is hard to demonstrate in females, and reducing levels under 240 does not result in dramatic benefits, despite studies showing a linear relation between cholesterol levels and coronary heart disease. Others point out that stress and Type A behavior are also associated with increased cigarette smoking, elevated blood pressure, and high cholesterol. However, lowering stressful Type A behavior seems to reduce not only these standard risk factors but also the incidence of coronary events according to one report. In another recent study, the effect of stress reduction on plasma lipids, blood pressure, and blood sugar was studied. Patients received instructions on coronary heart disease and coronary risk management, but the treatment group also listened twice daily to a thirty-minute cassette tape containing guidance in progressive muscular relaxation and were taught to elicit Benson's Relaxation Response. The control group simply engaged in a reading program of self selected material for thirty minutes twice a day. Both groups were seen by a nurse practitioner and dietician at weekly intervals for seven weeks and were asked to estimate on a five point scale their level of general anxiety. Systolic blood pressures fell dramatically in the experimental group which also demonstrated a significant lowering of total cholesterol and more importantly LDL cholesterol when compared to controls. The observation that such benefits could be demonstrated in less than two months is most encouraging and suggests the need for further and more protracted research.

"The difficulty in science is often not so much how to make the discovery but rather to know that one has made it."

J.D. Bernal

Heart Deaths Highest in Northeast States

In 1985, 320 out of every 100,000 males in New York State died from heart attacks compared to a national average of 249 and a low rate in New Mexico of 151 per 100,000. The five worst states for men were New York, New Jersey, Rhode Island, Michigan, and Ohio. Researchers have often pointed out that despite an identical preponderance of standard risk factors such as cigarette smoking, elevated cholesterol, and hypertension, heart attack death rates are much lower in Hawaii or places where we tend to take vacations as compared to industrialized areas such as Framingham, Massachusetts. A new Center for Disease Control study seems to support this, noting that the lowest heart disease death rates for men included Hawaii, New Mexico, Maryland, and Utah. It is not likely that differences in cholesterol or blood pressure are the reason for this marked variation. While some suspect that there may be some correlation with smoking habits, many feel that the real explanation is related to the level of stress. Stressful life styles can contribute to both increased cigarette smoking and coronary heart disease.

"Observation is a passive science, experimentation an active science."

— Claude Bernard

Type A Behavior and Sudden Death after a Healed Heart Attack

One recent report suggests that Type A behavior is not a risk factor for a second heart attack, and indeed may even confer some protective benefits. This conclusion comes from a long term follow-up of heart attack patients in the Western Collaborative Group Study and has fueled the controversy over whether or not efforts should be made to modify Type A behavior after a heart attack. A new study from the Recurrent Coronary Prevention Project which followed 1,000 post-infarction patients over ten years does, however, show a link between "sudden cardiac death and the mental stress associated with Type A personality." All of the individuals had at least one or more documented heart attacks prior to enrollment, were under the age of 65, and non-smokers without evidence of diabetes. Of this group, 862 agreed to long-term counseling, 270 patients received cardiac counseling alone, and 592 patients received both cardiac and Type A behavior counseling. The remaining 150 patients received no instruction. Type A behavior was assessed using a fifteen-minute video tape interview and sudden cardiac death was defined as that

occurring within an hour of onset of symptoms. After four-and-a-half years, a total of 23 cardiac deaths, 32 non-sudden cardiac deaths, and 87 non-fatal heart attacks were recorded. Sudden cardiac death occurred most often in those with Type A behavior, low socioeconomic status, and lower educational levels. Only Type A behavior was found to be an independent risk factor for sudden death although this did not apply to non-sudden cardiac death. It was suggested that Type A personality patients are more likely to be involved in stressful situations and to have greater catecholamine responses to stress which could contribute to lethal disturbances in heart rhythm. This study clearly shows a direct relationship between stress and sudden cardiac death and may provide some insight into prior failure of prospective studies to find an association between Type A behavior and overall recurrent cardiac mortality.

Does Laboratory Blood Pressure Reactivity Predict Responsiveness To Daily Stress?

Ambulatory monitoring reveals that there are often marked and asymptomatic fluctuations in blood pressure throughout the day. Some studies show that the greatest elevations are apt to occur at work, especially during stressful telephone conversations. Ambulatory monitoring is a costly and time consuming procedure and results could vary from day to day depending upon numerous factors. On the other hand, blood pressure reactivity can be easily measured in the laboratory under more controlled circumstances using either the cold pressor test or by hyperresponsiveness to predominantly emotional stressors such as timed mental arithmetic or other non-physical challenges. A recent study was undertaken to determine the extent to which measurement of blood pressure reactivity in the laboratory setting could predict blood pressure variations during normal daily activities in patients with borderline hypertension. Tests of reactivity included a physical stressor (treadmill exercise) and two predominantly psychological stressors in the form of coping tasks involving mental arithmetic and playing a competitive video game. The results failed to show any significant correlation between those individuals who were defined as overreactors on the basis of laboratory testing with increased surges of blood pressure throughout the day as measured by ambulatory monitoring. The authors thus suggest that there is no practical information to be gained by measuring blood pressure hyperreactivity in hypertensives in the laboratory. However, it should be noted that other research has shown a correlation between blood pressure (continued on page 7)

Does Laboratory Blood Pressure Reactivity Predict Responsiveness To Daily Stress?

(continued from page 6)

reactivity during mental arithmetic in the laboratory and increased blood pressure responses during classroom public speaking. While proponents of ambulatory monitoring claim that their results are quite reproducible on repeat testing, it seems likely that this may depend upon the types of daily activities encountered, and factors such as job stress are often difficult to predict or control.

Anger, Blood Pressure And Death

Anger and hostility are being increasingly identified as specific risk factors for coronary heart disease and hypertension as well as their complications. Some believe this is the most important predictive component of Type A behavior for coronary heart disease. Other research suggests that it may be how we handle anger that is important, suggesting that those who keep their feelings "bottled up" are at greatest risk. Data from the Framingham study reveal that middle-aged men and women who developed coronary heart disease exhibited more stressful evidence of "hostility," and keeping anger in than matched controls. Other prospective studies have also shown a strong association between hostility and subsequent coronary events as well as overall mortality in individuals followed for over two decades. However, this conclusion was based upon a subscale derived from responses to the Minnesota Multiphasic Personality Inventory questionnaire (MMPI). Some question whether or not this approach is able to adequately assess and quantify the complex, multidimensional aspects of anger and hostility. It may relate more to the quality and quantity of social support or "cynicism" rather than hostility and anger suppression.

In a recent study, anger-coping types were assessed by measuring responses to two hypothetical anger-provoking situations. One involved injustices perpetrated by a power figure such as a policeman, compared to those inflicted by one's spouse or "sweetheart." In each situation individuals had to indicate to what extent their anger would be expressed, what level of guilt would later result as a consequence of outward display of anger and whether one would walk away from the unjustified attack rather than protesting it vigorously. The responses were utilized

to construct separate scales for anger, guilt and protest as well as the ability to express these feelings. Changes in blood pressure were also noted. The researchers followed approximately 700 men and women between the ages of 30-69 who had enrolled in a research study beginning in 1957, which utilized such measurements, correlating it with subsequent mortality data from 1971 to 1983. There was no evidence that suppressed anger was directly related to the development of subsequent hypertension over the time period studied using this approach. There was no significant association with mortality for any of the anger-coping items involving an unjustified attack by a policeman. However, two out of three anger-coping items related to an unjustified attack by one's spouse did predict mortality risk. Those who held their anger in were 2.4 times more likely to die over the follow-up period compared to those who were able to express their anger to their mate. Respondents who did not even protest an unjustified attack by their spouse were 1.7 times more likely to have died during this follow-up period compared to those who were able to get things off their chest about the incident. Increased mortality for the anger-in group was not related to age, sex, or education.

The implications of this study are intriguing. In a recent report of some 900 heart attack patients, those who received Type A behavior counseling in addition to routine cardiological instruction were reported as having only half the incidence of recurrent heart attacks when compared to controls who received solely cardiological counseling. However, it is not clear as to which specific components of Type A behavior were actually lowered during this program. How we cope with or express anger also seems to influence the likelihood of developing a variety of other disorders including arthritis and tumors of the lung and breasts. A two-year follow-up study of 160 women with breast tumors who had been given tests of anger expression before the diagnosis was made strongly suggested that "altered expression of anger is much more frequent in cancer patients." The report also found that the ability to release suppressed anger was associated with higher blood levels of IgA (Immunoglobulin type A) which correlated with the size of the tumor. This body of research strongly suggests that improving methods of measuring anger and its expression could prove useful in alerting patients at risk about the need to alter potentially harmful behavioral traits.

"The nearer we approach great men, the clearer we see that they are men. Rarely do they appear great before their valets."

—Jean De La Bruyere

Book Reviews • Meetings and Items of Interest

Book Reviews

Walter B. Cannon, The Life and Times of a Young Scientist, Benison, S., Barger A.C. and Wolf, EL, Harvard University Press, Boston, 1987. 520 pp. \$30.00.

This is a superb book, carefully researched and splendidly presented. It contains a wealth of biographical detail and insight into Walter Cannon and his illustrious contemporaries who established the standards responsible for making the United States preeminent in medical research and education in the twentieth century. Cannon put the scientific study of stress on the map and was the first to use that term in its presently accepted context as reflecting both physical and emotional demands upon the organism. The background events and research which led to the formulation of his now famous "fight or flight" hypothesis in 1915 are presented in a compelling and authoritative fashion. Most of us are aware that it was Cannon who coined the term "homeostasis" and emphasized the importance of maintaining the integrity of this "steady state" as the essential ingredient of health. However, it is not as well known that his initial research involved the mechanism of swallowing for which the recently discovered X-rays provided a new approach. Before the turn of the century, while still a medical student, Cannon proposed the use of barium to study mechanisms involved in gastrointestinal motility. This X-ray preparation is still used today when performing GI series and barium enemas. Cannon was also intimately involved in matters dealing with medical education and social issues which currently continually confront us. He was responsible for the introduction of the case method of instruction in medicine, which later spread from Harvard to every medical teaching institution throughout the U.S. He established and enforced sensitive criteria to deal with the thorny problems of responsibilities and reimbursement for full-time academic physicians as compared to private practitioners with faculty appointments. He was innovative and persuasive in promoting efforts to improve basic research and finding sources for funding promising projects. One of the major social issues of the day revolved around the issue of animal research. The tremendously emotional protests of antivivisectionists threatened the future of all animal and human research. His success as the leader of the defense against the antivivisection movement was achieved largely because he was respected as an honest, compassionate individual. More importantly, he was a careful researcher who was most respectful of the dignity of life and who always exercised scrupulous care to avoid unnecessary suffering in his experiments.

It is not possible in a short review to do justice to this book which follows Cannon's amazing career up until 1917, when the United States entered into World War I. We have had to wait a long time for a biography of Walter Cannon but the wait was well worth it. This book is not only a biography of a great man, but an important and vivid portrayal of the history of medicine in the early 20th century. It is uniquely valuable for those who are

interested in the origins of the stress concept but also any investigator involved in research. Walter Cannon was indeed a "Man For All Seasons." His honesty, warmth, concern, and sense of humor clearly shine through in this otherwise restrained and objectively scientific portrait. One can only hope that the sequel dealing with the triumph of his later years will be available soon.

Work Stress: Health Care Systems in the Workplace, Quick, J.C., Baggett, R.S., Dalton, J.E., and Quick, J.D. eds. Praeger Publishers, New York, 1987. 328 pp. \$39.95

The problem of job stress is attracting increased attention and is viewed by many as one of the major health and fiscal problems in the United States today. Health care costs now exceed one million dollars a day and represent 12% of the gross national product. A significant percentage of these can be shown to be stress related and more specifically linked to occupational stress. The problem is increasing rapidly as evidenced by the tremendous rise in workers' compensation claims which have tripled in the past few years in some states. The dimensions of the problem, what has been done about it, and what can be done about it are the subject matter of this book. The senior author has a long and distinguished history in this field and has enlisted the aid of more than two dozen authoritative researchers to provide some comprehensive answers to these questions. The problems are looked at from almost every vantage point including that of the practitioner, the researcher, social scientists, management, unions and labor, industrial psychologists and psychiatrists, occupational medicine consultants, and those involved in employee assistance programs. Health, fiscal, and legal implications are all exhaustively reviewed and there is surprisingly little reduplication in a multiauthored work of this nature. The material is authoritative, attractively presented, and well referenced. This book is a must for anyone interested in the multifaceted problem of occupational stress.

Meetings and Items of Interest

July 11-14, The Role of Exercise and Nutrition in Preventive Crested Butte, MO., ISC Division of Wellness, (813) 686-8936.

July 22-24, Depression-Psychobiology, Psychodynamics and Therapy, Harvard Medical School, Department of Continuing Education, Boston, MA 02115.

Aug. 30-Sept. 3, Third International Interdisciplinary Conference on Stress Management, University of Edinburgh, Scotland.

Oct. 13-15, Psychobiology of Human Eating Disorders, New York, NY, New York Academy of Sciences, (212) 838-0230.

Nov. 17-20, 35th Annual Meeting of the Academy of Psychosomatic Medicine. New Orleans, LA. (312) 784-2025.

Nov. 30-Dec. 4, First International Congress on Stress, Montreux, Switzerland. Contact American Institute of Stress, 1-800-24 RELAX in NY (914) 963-1200.

The Newsletter of
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