

The Newsletter of THE AMERICAN INSTITUTE OF STRESS

Volume 2 Number 4, 1989

More on Job Stress Due to Lack of Control

A study of 4800 men with a history of heart attack reviewed records and information obtained from national health data bases and government employee services. The men's jobs were rated to provide scores that would reflect certain psychological demands. These included the need to work quickly or excessively, as well as the degree of decision-making authority and intellectual challenge. We typically tend to think of heart attacks due to job stress as occurring in ambitious, hard-driving, competitive individuals at executive or upper management levels. However, the results of this study showed that most heart disease occurred at lower echelons such as assembly line personnel, garment district workers, waiters, and cooks. These are all high-stress occupations because they combine a high degree of demand with little control. The heart attack rate for the total sample was only 1.5 per cent. However, the rate for men in high-stress jobs was nearly three times as much. There was no evidence of increased risk for "high status, presumably success-oriented, managerial or professional occupations." As one sociologist noted, "an assembly line worker, for instance, has virtually no control over the methods and tools he uses, whom he

works with, when he works, or in the design of the product . . . lawyers and doctors, on the other hand have control over almost everything they do." Interestingly enough, the percentage of men in high-stress jobs appeared to decrease with age, suggesting that they possibly move out of stressful jobs as they get older, or somehow adapt to the situation. Other studies suggest that workers in low-control jobs are also more likely to smoke and have higher blood pressures than those engaged in occupations where they can make decisions. Data from the Framingham study also reveal that women in low-control jobs have more heart attacks. Heart disease risks are twice as great among women in low-control clerical jobs as compared to housewives and self-employed females. These concerns and other observations have been responsible for the markedly increased interest in stress management training in the workplace on the part of corporations and unions.

(*Psychology Today*, April, 1989)

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"Man needs not only knowledge but ignorance too. Knowledge alone, or ignorance alone, leads him into darkness . . . The world is so filled with the matter of knowledge that men would go mad if they were to attempt to cram all of it into their heads. The ability to forget is just as necessary as the ability to remember.

Vinoba Bhava

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**

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Depression and Complications Of Coronary Heart Disease

Much has been written about how Type A behavior and various components such as hostility and anger can contribute to heart attacks. And it has long been appreciated that acute anxiety can cause a variety of disturbing cardiovascular symptoms. However, recent research suggests that major depression may be the best predictor of future complications in patients with coronary heart disease. A study of 52 individuals, diagnosed as having coronary heart disease, were evaluated for significant depression. Seventeen per cent of the patients met the criteria for this disorder as compared to less than three per cent in an age matched control sample. Almost 80% of the depressed patients went on to experience some adverse cardiac event in the 12 months following diagnosis, in contrast to only 35% of the non-depressed patients. Major depression proved to be the strongest predictor of subsequent cardiac problems including heart attacks, need for coronary by-pass surgery, death, and increasing medication requirements. This correlation was more significant than that associated with age, smoking, and even severity of disease. Depression has been linked with an increase in the activity of the sympathetic nervous system. This could predispose to a greater likelihood of insufficient blood supply to the heart, disturbances in heart rhythms, and possibly progression of arteriosclerosis. Researchers suggest that if depression is detected and treated early enough, further complications could be significantly reduced in patients with cardiovascular disease. *(Omni Longevity, April 1989)*

Stress and Dentists

A recent survey of dentists revealed that the major stress associated with their profession were frequent feelings of being discouraged and disillusioned. "More than 42% indicated that they would switch to another career if an opportunity arose." Complaints included a general sentiment that their services were undervalued or unappreciated by their patients. The problem of low professional self esteem did not appear to be compensated for by any improved economic status. Trouble staying on schedule or seeing an appointment book with a lot of openings were other major stresses. Additional frustrations were the difficulties of running a business along with its associated financial and time demands. Many dentists complained of their "second-class citizenship status" in comparison with physicians. It is sometimes true, or more frequently assumed, that the choice of a dental career is the result of not being able to gain admission to medical school or some other institute of higher learning that would have provided a more prestigious profession. As noted, the cocktail party comment, "I thought you were a *real* doctor" becomes an anxiety stimulating trigger.

In addition, professional isolation, boredom, and physical and mental fatigue can also contribute to the stress of dental practice. Such problems can be alleviated or prevented by participation in support groups, learning time management and stress-reduction strategies, and engaging in other activities which promote a sense of self esteem and satisfaction.

(Bulletin of the Society for Professional Well-Being, December, 1988)

Does the Stress of Day-Care Centers Contribute to Illness?

In a study of 843 children under the age of three, it was found that those who were in day-care centers were 4½ times more likely to be hospitalized for an illness than those brought up in other settings. The day-care center group was compared with a matched population who were being cared for by relatives or in private homes. The most significant factor appeared to be the number of children cared for in a single setting. Upper respiratory and ear infections requiring surgical drainage were a significant problem. It is conceivable that parental separation and the strange environment might be stresses that would lower immune system defenses against bacteria and viral pathogens. It was noted that "40% of parental absenteeism from work was because of a child's illness." Many authorities feel that employers and insurers might save money by financing day-care centers in the workplace where child-parent relationships could be maintained.

(USA Today, April 17, 1984)

Kangaroo Stress

It has been well established that the death of a spouse is at the top of the list of stress-rating scales. Widowed individuals die at rates much higher than age matched controls following bereavement for all the leading causes of death, including cancer, heart attacks, and suicide. While stress-rating scales for the animal kingdom have not been established, a recent Italian newspaper headline, "Kangaroo kills himself after losing his lady companion," is of interest. According to the story, a female kangaroo at a zoo in Brescia, Italy, had to be destroyed after breaking a leg. "Within a week, the dead kangaroo's mate either fell or threw himself into the deep ravine surrounding the compound" and the act was apparently viewed by zoo workers as a deliberate act of suicide. One employee described the kangaroo as "deeply depressed. Its state of mind certainly contributed to its death." This is not an isolated finding. Finches often apparently die for no apparent reason, shortly after the death of a mate. We have all heard stories about how a dog will refuse to eat following a master's death, sometimes leading to starvation. One official at Florida's Bush Gardens noted "I know of examples where one animal dies and the perfectly healthy mate dies shortly thereafter." We have frequently commented on the health effects of a strong social support system in the Newsletter, and since this appears to have a biological basis, there is every reason to assume that it applies to the animal kingdom.

(Omni, February, 1989)

"It is impossible for anyone to begin to learn what he thinks he already knows."

— Epictetus

Cancer Survival Time Improved With Stress Reduction and Social Support

Prior Newsletters have emphasized the powerful stress reduction properties and therapeutic effects of a strong social support system. This is most evident in organizations such as Alcoholics Anonymous, Gamblers Anonymous, Weight Watchers, and other self-help groups. Such stress reduction approaches and others have been reported to prolong the life expectancy of cancer patients in several studies, such as those reported by Eysenck at our last Montreux Congress. Most accounts are anecdotal, however, and considerable controversy continues about the role of psychological factors in malignancy and other diseases. A recently reported ten-year study of women with metastatic breast cancer, does, however, appear to provide considerable support for the stress-cancer link. Eighty-six middle-aged women were randomly assigned to a

medical treatment group alone with matched controls receiving the same treatment in addition to weekly group support activities which included instruction in self hypnosis and other techniques to assist in controlling pain, stress and loneliness. After one year of the program, a questionnaire revealed that women in the support group significantly "experienced fewer mood swings and less fear and pain than their counterparts." A follow-up study, ten years later, revealed that 83 of the 86 women in the study had died. However, the women who had been involved in group therapy stress reduction activities lived an average of 36.6 months compared to only 18.9 months for those receiving only the same medical treatment. It was theorized that this greater longevity was related to the benefits afforded by the opportunity to openly express and share feelings with others, therapy and the strong sense of social support provided by group activities, both of which are powerful stress buffers. It was also suggested that such activities may have "nourished" a sense of hope, enabling the women to comply better with medical advice. Other research also suggests that a positive attitude and purposeful group activities may improve immune system defenses against cancer.

(Los Angeles Times, May 11, 1989)

"Life is a shadow, saith the Scripture, but is it the shadow of a tree or a tower that standeth? Nay, it is the shadow of a bird in its flight. Away flieth the bird, and there is neither bird nor shadow."

— quoted from the Talmud by John Morley in the last chapter of his "Recollections."

Does Hospital Staff Stress Threaten Patient Care?

According to researchers at one California hospital, overworked interns and residents have created a "crisis" situation that can seriously affect patient care. They state that "Sleep deprivation is probably the greatest source of stress in residency." Several other studies were cited including one which found that 40% of the residents questioned were "so depressed or anxious for four or more weeks during training that their performance was impaired." It was noted that the airline industry is well aware of the problems associated with sleep deprivation and has established guidelines to insure that pilots get adequate rest. Legislation in several states, including New York, has been recently enacted to insure that interns and residents do not work for excessively long periods of time because of evidence that this can lead to fatal errors. However, the researchers suggest that changes should "come from within the training programs rather than from external mandates that could impose arbitrary restrictions on programs."

(Physician's Financial News, March 15, 1989)

Health Insurance for Treating Stress-Related Disorders?

Why not? After all, various surveys show that stress-related complaints and disorders account for 75 to 90% of all visits to primary care physicians. Headache, backache, anxiety, insomnia, hypertension and even obesity are often stress related. Drug therapy may provide some benefits, but often have undesirable side effects or cause problems related to dependency. As a consequence, there has been increased interest in behavioral therapies designed to get at the root of the problem, rather than simply provide symptomatic relief. Biofeedback, meditation, muscular relaxation techniques, and behavioral modification have all been demonstrated to provide lasting relief for many patients with such complaints. And compared to drug treatment, they are safer and often more cost effective in the long run. Another frequently reported bonus is increased productivity and an improved quality of life. A vivid example is provided by one report indicating that behavioral modification was 50% effective in preventing a recurrent heart attack in Type A patients.

At present, some fiscal intermediaries will reimburse for "stress reduction" therapies, but not at realistic rates or only if it is described in other terms, such as "psychotherapy." However, many patients resent this label and their primary care providers do not qualify as psychiatrists. In addition, even when reimbursement is provided for this, or for biofeedback, it is usually only for \$20-\$25 per session. Over the same amount of time, the reimbursement returned for the 4-6 patients that could have been seen for routine office visits would have produced six to ten times more income! Insurance companies should recognize that investing in *appropriate* and *qualified* stress-reduction strategies would have not only saved them money over that time period, but also in reducing future medical costs down the line. That's part of the problem, since such services are difficult to monitor qualitatively and quantitatively, creating the potential for abuse. One possible solution would be the establishment of criteria to qualify and certify stress reduction activities and providers, and this is currently being pursued by the American Institute of Stress and other agencies with the cooperation of interested consumer and provider organizations.

(Advances, Volume 5, No. 4, 1989)

"When we consider the reasons we have to think that what lies within our ken is but a small part of the universe, we shall discover a huge abyss of ignorance."

— John Locke

Stress Due to Fear of AIDS Worth \$21.7 Million

In a recent court decision, the late Rock Hudson's lover, Mark Christian, was awarded 21.7 million dollars because the former movie star allowed their intimate relationship to continue although he knew that he had contracted AIDS. In addition, it was also disclosed that although Hudson's personal secretary also knew of this serious medical problem and its life-threatening potential consequences, no attempt was made to warn Christian of the dangers of continuing the relationship. The situation came to light after Hudson's death. Although Christian tested negative for the AIDS virus, he was nevertheless awarded 7.2 million dollars for punitive damages, and 14.5 million dollars in compensatory damages. A recent news report indicated that the judge had reduced to 3 million dollars the 7.2 million for punitive damages, but it was not clear as to whether the 14.5 million dollar award against the estate would also be reduced. There is increasing evidence that stress may influence how quickly an HIV-infected patient develops clinical AIDS, as noted in the following article. It is believed that the incubation period for AIDS may be as long as eight or nine years, and should Christian develop the disorder, it could be argued that the emotional stress sustained as a consequence of his continuing relationship with Hudson, long after it should have been halted, could have played a contributory role.

"Science is the topography of ignorance."

— Oliver Wendell Holmes

Stress and Clinical AIDS in HIV-Infected Patients

As noted in previous issues of the Newsletter, positive thinking, social support, and stress reduction measures may prolong the length of time it takes for an AIDS-infected patient to develop clinical symptoms, and possibly may even prevent their appearance. As its name implies, AIDS is characterized by a deficiency in immune system function. Since stress can also lower immune system defenses, it seems plausible that it could aggravate the illness, as well as hasten its clinical appearance in symptom-free infected patients. In one recent survey of 40 homosexual males, those who had contracted the virus but who had not progressed to clinical AIDS, had much less stress in their lives, more social support, and more effective ways of coping with stress than those with obvious signs and symptoms of the disease. The researchers urged that a positive attitude and sense of control (continued on page 5)

Stress and Clinical AIDS in HIV-Infected Patients

(continued from page 4)

should be strongly encouraged, suggesting that "it may even help for HIV-infected patients to deny to some extent the idea of their eventual disability and death." Community support groups can be helpful by providing social support. Cognitive therapy approaches which emphasize positive, rational thinking techniques may be of particular value in patients who are depressed or anxious and tend to resort to various medications that may have undesirable side effects. Under any circumstances, such approaches clearly improve the quality of life, if not its duration, in AIDS-infected patients.

(Dr. Carl Goodkin, University of Texas,
Southwestern Medical Center, Dallas)

"Progress is man's ability to complicate simplicity."

— Thor Heyerdahl

More on Stress and Aging

As noted in previous issues of the Newsletter, increased stress appears to be associated with an increase in certain facets of the aging process. Anecdotal reports of individuals whose hair turned gray "overnight," following a stressful encounter, are commonly cited. Age appears to be equated with a declining ability to cope with stress. A German colloquialism which translates as "You are looking old," means you have failed or stand little chance of solving a problem. In one recent survey, 145 residents of an old people's home completed a detailed questionnaire asking details concerning their feeling about old age, and more specifically, their personal chronological age. Three years later, a check of the same population revealed that a computerized evaluation of responses to the questionnaire was 92% correct in predicting who would survive. As the senior investigator noted, "we naturally can't conclude from a questionnaire who will be alive in three years' time and who won't, but it does seem quite clear that anyone who has a negative attitude about his or her age, and sees no viable future, seems to age faster and stand a much poorer chance of survival." These findings appeared to be true regardless of whether or not the individual was ill or healthy. It also appears that people who stay active, and react to the stimuli of their surroundings are the ones most likely to keep their minds busy and survive to a meaningful old age. The investigators injected a note of caution, warning that too much activity can be as detrimental as not enough. Thus, you must strive "to be active, but be aware of your limitations and keep within them."

Often it is not the individual, but the surroundings

that are most important. Another survey split residents of an old people's home into a group who continue to be cared for along institutionalized guidelines, and another who were encouraged to make their own decisions and act upon them. After a year and a half, both nurses and doctors found that the second group were healthier and enjoyed a better quality of life. Over that same time period, nearly 30% of the regimented residents died, in contrast to only 15% of those who were permitted to exercise their own decisions about life activities. Such studies confirm other reports of nursing home residents who showed greater longevity and better health when they were allowed to enter into decisions about their daily activities and had the opportunity to express their emotions. The researchers noted that "many old people are institutionalized merely because society no longer gears its requirements to the abilities of older people. Feeling useless and unable to remedy the situation, old people, who are cast aside, sink into a vicious circle of decline." Many older individuals are capable of "establishing a much deeper, richer and more humane relationship with other people than the young — if only they are given the chance."

(The German Tribune, March 19, 1989)

"The thing of which I have most fear is fear."

— Montaigne

Stress-Related Hypertension Linked to Dietary Sodium/Potassium Ratio

The effect of salt or sodium on blood pressure seems to vary considerably in different individuals and the same may be said for stress. In a recent report, the blood pressure response to a stressful mathematical task was measured in 57 healthy volunteers. The average systolic rise was 14 mm. of mercury and 9 mm. for the diastolic. These findings were then correlated with urinary sodium/potassium ratios which were assumed to reflect the dietary intake of these elements. The results revealed that the higher the ratio, the greater the magnitude of elevation of blood pressure following mental stress. The practical significance of these observations is not clear, since there is no good evidence that cardiovascular hyperreactivity in the laboratory predicts future sustained hypertension. The pattern of sodium/potassium urinary ratios noted may reflect genetic as well as dietary influences. However, the study does suggest that dietary habits must be taken into account in evaluating the results of laboratory procedures that deal with stress-related hypertension.

(Internal Medicine News, May 1-4, 1989)

Pavlov, The Immune System And Cancer

It was about 100 years ago that Ivan Pavlov developed the concept of the "conditioned reflex" by ringing a bell at the same moment that he fed his laboratory dogs. After repeating this combined activity several times, he discovered that simply ringing the bell, without providing any food, still caused the dogs to salivate and exhibit characteristic gastrointestinal changes normally associated with digestion. In the last decade, Ader and coworkers demonstrated that similar conditioning effects could be induced in the immune system of rats by simultaneously administering a saccharine solution and a chemotherapeutic agent that alters immune system reactivity. After a suitable period of time, drinking the saccharine solution alone produced the same immune system responses as if the drug had been given. In a German study, subjects were given a daily injection of a small amount of adrenalin, which increases the activity of natural killer cells that attack and destroy invading pathogens. The adrenalin injections were accompanied by the ingestion of sweet sherbet. After the fifth day, a common salt solution was substituted for the adrenalin injections, and it was again found that simply eating the sherbet had the same positive effect on natural killer cell activity. In other research, bone marrow cells were transplanted from one mouse into another, to determine whether this would also effectively transfer the donor mouse's immune system. The surface structure on the cells of the immune system, known as the main histocompatibility complex, also produces a characteristic body odor. This is important because male rodents mate with females primarily because they have an attractively distinct and different odor than their own. These experiments revealed that the bone marrow transplantation not only successfully transferred intrinsic genetic and immunologic properties and characteristics, "but also the typical odor and preference for certain partners." The fact that mice can literally "smell" the immune system of another animal, and relay this information to the brain, provides further evidence of the strong links between the mind and the immune system. Other support comes from a large body of research demonstrating that stress reduces immune system defenses against cancer and can significantly influence tumor growth."

As noted in prior issues of the Newsletter, such research may have important implications for cancer patients. Attempts to uncover the mechanisms of action involved in brain-immune system interactions suggest several pathways. Immune responses can be affected by brain neuropeptide and various other humoral secretions. In addition, hard-wired, direct nerve connections to lymphatic tissues can be demonstrated to influence the maturation and repli-

cation of B and T lymphocytes. Stress and various emotions can influence the level and activity of brain neurotransmitters, such as the endorphins, and a variety of other stress-related hormones also influence immune system function. Adrenalin inhibits the production of antibodies in B cells, and cortisone-like hormones, which are remarkably increased during stress, also interfere with the body's defense mechanisms. A similar effect can be seen with progesterone. On the other hand, insulin and growth hormone appear to stimulate the defensive properties of B and T cells. The original stimulus for all these activities appears to arise in the hypothalamus which has the ability to detect a substance released when cells of the immune system are called into action. As part of the response, the pituitary is stimulated to make ACTH, resulting in the secretion of hormones like cortisone. Other pituitary trophic hormones stimulate additional target glands. As in other regulatory body systems, a complex series of checks and balances seems to exist, such that the same hormone can exert opposite effects on different parameters of immune system function. Thus, while adrenalin increases natural killer cell activity, it suppresses the efficacy of B and T cells. Similarly, the effect of stress on tumor growth depends upon its nature, magnitude, duration and timing. An identical stressor can increase or decrease experimental tumor growth depending upon whether it is administered before or after the inoculation of malignant cells. Further research into how such effects are achieved may ultimately lead to the development of effective psychological and pharmacologic strategies to enhance the body's natural immune system defenses against cancer and viral infections.

(The German Tribute, April 30, 1989)

"Time crumbles things; everything grows under the power of Time and is forgotten through the lapse of Time."

— Aristotle

Does Stress of Hearing Impairment Contribute to Alzheimer's?

We have previously reported on research demonstrating that the stress of hearing impairment can contribute to psychological difficulties, especially in older individuals. Studies of patients in mental institutions reveal that schizophrenics have a much higher incidence of significantly impaired hearing than age matched healthy individuals or patients with other psychiatric diagnoses. In another experiment, college students were given the posthypnotic suggestion that they would have hearing difficulties (continued on page 7)

Does Stress of Hearing Impairment Contribute to Alzheimer's?

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which would significantly interfere with their comprehension of group conversations for the next few months. This resulted in significant and progressive psychological problems in those individuals who responded positively to this posthypnotic suggestion of partial deafness. Diminished vision and hearing are natural consequences of growing older. However, hearing problems aren't as troublesome as problems associated with not being able to read. In addition, many patients quickly adapt to gradual hearing loss by lip reading and learning to interpret the communicative signals of facial expressions and body language. And hearing aid devices are much more annoying and unattractive than glasses. All of these factors may help to explain why so many individuals fail to take corrective measures when their hearing becomes impaired.

A common scenario is an elderly individual who cannot comprehend a conversation carried on by a nearby group. It is often assumed that the "whispering" is deliberate because the individual is the subject of discussion. Over a period of time, this may lead to feelings of paranoia causing changes in personality and behavior, and progressive social isolation. Eventually, such antisocial behavior can lead to concern on the part of family and friends who indeed begin to whisper or talk about the individual — and there is nothing worse than being paranoid and being right! Further corroboration of these relationships and tendencies comes from a recent report on hearing impairment in 100 patients with Alzheimer's-type dementia and an equal number of age, sex and education-matched controls. The prevalence of a hearing loss of 30 dB (decibels) or more was significantly higher in the demential patients than in controls. In addition, the greater the hearing loss, the greater the likelihood of dementia, cognitive dysfunction and depression. The authors do not suggest that hearing impairment "causes" Alzheimer's disease, but rather that it quite likely aggravates the symptoms of dementia, thus making its diagnosis more obvious. Correcting the impairment with a hearing aid or surgical procedure might not "prevent the progression of the disease but it could significantly improve the associated problems of confusion, depression, and social withdrawal."

(J.A.M.A., 4-7-89)

"Knowledge is the raw material of ignorance and vice-versa."

— Marlys Witte

More on Stress Reduction Effects of Pets

A strong social support system has been found to have powerful stress-reducing properties. Having a pet can provide pleasurable companionship, and, unlike humans, they tend to give unconditional love and affection. Pets can also have a very positive effect on psychological well-being. In one study of 50 patients who had not responded to psychotherapy for depression, 47 subsequently improved after close and caring contact with various pets. "Pet therapy" has been found to provide significant benefits for nursing home residents, and as previously reported in the Newsletter, having a pet can reduce a patient's blood pressure and feelings of stress, and improve the survival rate of heart attack victims. In one survey of pet owners in eleven states, "87% considered their pet a member of the family . . . and that pets were most important when the owners were sad, ill, or going through some other crisis." In a *Psychology Today* survey, respondents ranked pets behind friends and relatives, and ahead of their jobs, when asked to rate seven aspects of their lives in order of importance. Having a good relationship with a pet may provide several benefits including:

- companionship
- something to care for
- something to keep a person busy
- something to touch warmly and fondle
- something to watch
- something to make you feel safe
- something to provide a stimulus for socialization and exercise.

(Health Line, 4-89)

More Benefits from Meditation

Meditation can produce a state of deep relaxation that is the antithesis of the many harmful "fight or flight" responses to contemporary stress. It might be anticipated, therefore, that practiced meditators might enjoy better health. A variety of research reports appear to confirm this. One study of regular meditators reported up to 50 percent reduction in the need for medical care. In another, there were 80 percent fewer hospitalizations, especially for heart disease, mental illness and viral infections. All of these problems have been shown to be linked to stress. Such findings have apparently impressed health officials in the Soviet Union. They are currently opening a Maharishi Ayurveda medical clinic in Moscow and expect that similar medical centers will be established throughout Russia before the end of the year. In the Netherlands, Silver Cross, a major health insurance company, "gives a 30 percent rate reduction to TM practitioners."

(Gannett News Service 5/23/89)

Book Reviews • Meetings and Items of Interest

Book Reviews

Dictionary of Behavior Therapy Techniques, Bellack, A.S. and Hersen, M., eds. Pergamon Press, Inc., Elmsford, New York, 1985, 234 pp., softbound \$22.00

This volume is now in its third printing, which attests to its demand, and the apparent lack of any suitable superseding replacement in the past five years. As the editors correctly point out, the area of behavioral medicine has expanded in an explosive fashion, with various offshoots having their own separate lingo, utilizing terminology and verbiage that is not universally understood and may be interpreted as having a somewhat different denotation for those working in different but allied disciplines. There are well over 150 different articles dealing with every phase of behavioral therapy. These range from well known authenticated techniques such as *Rational-Emotive Therapy, Assertiveness Training, Cognitive Restructuring, Deep Muscle Relaxation, Biofeedback, and Operant Conditioning*, to comparatively "far out" approaches like *Lemon Juice Treatment, Directed Maturation, and Sex Therapy*. The latter is not yet covered by fiscal intermediaries, although others may be if claims are presented in an innovative and adroit fashion. Many of the authors are well acknowledged experts in their respective fields but the expertise and qualifications of others is less obvious. The important topics of *Stress Inoculation* and *Stress Management Training* had a combined total of only nine paragraphs, and probably should have been covered in a more authoritative and comprehensive fashion. There is no Subject Index, which is an annoying drawback, although the Table of Contents does tend to serve this purpose. Despite such deficiencies, this compact volume does serve a useful purpose for workers in the field of behavioral medicine.

Biodiversity, Wilson, E.O., ed., National Academy Press, Washington, D.C., 1988, 520 pp., \$32.50 hardbound, \$19.50 softbound.

This book stems from the 1986 National Forum on Biodiversity, sponsored by The National Academy of Sciences and The Smithsonian Institution. It is quite remarkable, and is reviewed here because it vividly portrays the destructive influence "Civilization" has had upon the earth's flora and fauna, which parallels the disorders it has also inflicted on mankind. Few of us have any appreciation of the unknown biodiversity that exists on earth in terms of plant and insect life that have never been categorized, or how fast they are disappearing. We do, however, recognize how closely our existence depends on the maintenance of the homeostasis of

the environment, and how much the medicinal use of plants has contributed to modern pharmacology. Perhaps 25% of drugs currently in use come from the earth's flora, but it is clear that we have not explored the properties of hundreds of thousands of other possible sources that might provide similar benefits. The tragedy is that hundreds of these are disappearing daily at an alarming rate, not because of natural processes, but as a result of the insensitive and wanton intrusion of civilization. There are numerous other syllogisms and comparisons which have important implications for our health and quality of life, among the superb contributions to this volume. The role of environmental and social support as a buffer against illness is being increasingly acknowledged, but it may extend far beyond mere human relationships. As Jay Gould noted, "This is the most comprehensive book, by the most distinguished group of scholars, ever published on one of the most important subjects of our (and all) times."

Meetings and Items of Interest

June 8-11, Creativity and Addiction, Cleveland (216) 494-4200, Ext. 225.

June 8-11, Healing, Change of Heart, June 8-11, Flat Rock, N. Carolina, (704) 258-0616.

June 23, Well-Being of Human Primates, Washington, D.C., (301) 654-6390.

June 26-Sept. 1, Tenth Cape Cod Institute (Daily morning series of lectures on Neuropsychology, The Relaxation Response, Diagnosis and Treatment of Sexual Problems, Children of Divorce, Adolescents in Trouble, Clinical Hypnosis, Marital Therapy, etc.) Cape Cod, MA. Contact Dr. Michael Peters, Albert Einstein College of Medicine, 1303 Belfer Bldg., Bronx, NY 10461 (212) 430-2307.

June 27-30, First International Congress of Behavioral Medicine, Uppsala, Sweden. Contact Ulla Wallin, Dept. of Clinical Psychology, Univ. of Uppsala, P.O. Box 1225, S-751 42 Uppsala, Sweden.

July 2-7, First European Congress of Psychology, Amsterdam. Tel. No. 020-5483851/5487361.

July 9-14, International Congress of Physiological Sciences, Helsinki. Tel. No. 358-31-551-740.

July 10-16, Laughter Therapy Trainings, Santa Barbara, CA, (805) 966-0025.

July 16-21, 14th National Wellness Conference, Stevens Point, Wisconsin. (718) 346-2172.

Aug. 7-13, Laughter Therapy Trainings, Santa Barbara, CA. (805) 966-0025.

Oct. 23-25, The Ecology of Work: Improving Productivity and the Quality of Work Life. Toronto, Ontario. Contact Tom Chase, R.R. #2, Box 44a, Northwood, NH 03261.

Dec. 3-7, International Round Table on Silent Myocardial Ischemia. For detailed information contact the Congress Secretariat, Tel Aviv; contact Kenes Ltd., P.O. Box 50006, Tel Aviv 61500.

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