Stress, Cancer, and the Mind

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Research on stress has progressed so rapidly in recent years that even our own Documentation Center has by now compiled an awe-inspiring 150,000 entries on stress and stress-related topics. The literature explosion has been even more considerable in connection with cancer research and psychosomatic medicine; this made it seem opportune in 1976 to present an overview of the entire field as it relates to virtually every facet of life in health and disease. However, new developments in stress research continue to occur almost every day, and this creates a pressing need for annual overviews of the latest findings of our colleagues in this field.

By way of an introduction, let us therefore deal with stress and the mind, at the same time stating our definitions of the basic concepts involved. Our first publication on stress and the general adaptation syndrome (G.A.S.) appeared in 1936 under the title "A syndrome produced by diverse noxious agents." Although it described our first primitive experiments on the stress concept more than 40 years ago and represented the very beginning of research in the field, it nonetheless holds true even today when we...
consider that the present definition of stress in biology contains much of the essence of those few original remarks on "the wear and tear of the body." Today, biologic stress is defined in most textbooks as "the nonspecific response of the body to any demand made upon it."

This rephrased definition was necessitated because, as time went by and more refined technology became available, it was noted that even happy circumstances, such as great pleasure, joy, or success, and healthy muscular exercise also trigger the same stereotyped stress response with the characteristic transmission of hypothalamic impulses to the pituitary for the mobilization of ACTH, corticoids, and other stress hormones, which is closely connected with Cannon's emergency "fight or flight" reaction accompanied by a massive autonomic discharge. Good stress, or eustress as we prefer to call it, is by definition agreeable, but if sudden and very intense, it can kill instantly, presumably as a result of cardiac fibrillation.

Each stressor or stress-producing agent, however, also elicits specific effects, depending upon its specific properties or characteristics, and these specific actions will in turn modify the nonspecific (stress) response of the organism. Furthermore, even the same stressor can exert different effects upon different people, because of their varying inherited and acquired stress susceptibility. The end result will depend, to a large extent, on the condition of the various organ systems, of which the weakest will naturally break down first. Thus, stress accompanies all disease phenomena and, in fact, all activities in life, but when the organism is exposed to any degree of stress incompatible with possibilities of adequate resistance or adaptation, stress can produce disease. In fact, stress is associated with every disease, although in some it plays a very small, and in others a very large role. And since stress is sometimes primarily responsible for the production of the most varied diseases, its predominant influence has led to such popular expressions as "stress diseases" or "diseases of adaptation," notably stress ulcers, stress-induced disturbances of the cardiovascular system or of the gastrointestinal tract, neuropsychiatric disorders, and allergies, to name a few. A certain predisposition is necessary in all of these maladies, and the same is true of cancer, in which the role of stress has been studied extensively but is still far from clear.