

# ADVANCED READING

## PASSAGE 1

*The National Security Act of 1947* created a national military establishment headed by a single Secretary of Defense. The legislation had been a year-and-a-half in the making—beginning when President Truman first recommended that the armed services be reorganized into a single department. During that period the President's concept of a unified armed service was torn apart and put back together several times, the final measure to emerge from Congress being a compromise. Most of the opposition to the bill came from the Navy and its numerous civilian spokesmen, including Secretary of the Navy James Forrestal. In support of unification (and a separate air force that was part of the unification package) were the Army air forces, the Army, and, most importantly, the President of the United States.

Passage of the bill did not bring an end to the bitter interservice disputes. Rather than unify, the act served only to federate the military services. It neither halted the rapid demobilization of the armed forces that followed World War II nor brought to the new national military establishment the loyalties of officers steeped in the traditions of the separate services. At a time when the balance of power in Europe and Asia was rapidly shifting, the services lacked any precise statement of United States foreign policy from the National Security Council on which to base future programs. The services bickered unceasingly over their respective roles and missions, already complicated by the Soviet nuclear capability that for the first time made the United States subject to devastating attack. Not even the appointment of Forrestal as First Secretary of Defense allayed the suspicions of naval officers and their supporters that the role of the U.S. Navy was threatened with permanent eclipse. Before the war of words died down, Forrestal himself was driven to resignation and then suicide.

By 1948, the United States military establishment was forced to make do with a budget approximately 10 percent of what it had been at its wartime peak. Meanwhile, the cost of weapons procurement was rising geometrically as the nation came to put more and more reliance on the atomic bomb and its delivery systems. These two factors inevitably made adversaries of the Navy and the Air Force as the battle between advocates of the B-36 and the supercarrier so amply demonstrates. Given severe fiscal restraints on the one hand, and on the other the nation's increasing reliance on strategic nuclear deterrence, the conflict between these two services over roles and missions was essentially a contest over slices of an ever-diminishing pie.

## PASSAGE 2

Behaviour is one of two general responses available to endothermic (warm-blooded) species for the regulation of body temperature, the other being innate (reflexive) mechanisms of heat production and heat loss. Human beings rely primarily on the first to provide a hospitable thermal microclimate for themselves, in which the transfer of heat between the body and the environment is accomplished with minimal involvement of innate mechanisms of heat production and loss. Thermoregulatory behaviour anticipates hyperthermia, and the organism adjusts its behaviour to avoid becoming hyperthermic: it removes layers of clothing, it goes for a cool swim, etc. The organism can also respond to changes in the temperature of the body core, as is the case during exercise; but such responses result from the direct stimulation of thermoreceptors distributed widely within the central nervous system, and the ability of these mechanisms to help the organism adjust to gross changes in its environment is limited.

Until recently it was assumed that organisms respond to microwave radiation in the same way that they respond to temperature changes caused by other forms of radiation. After all, the argument runs, microwaves are radiation and heat body tissues. This theory ignores the fact that the stimulus to a behavioural response is normally a temperature change that occurs at the surface of the organism. The thermoreceptors that prompt behavioural changes are located within the first millimeter of the skin's surface, but the energy of a microwave field may be selectively deposited in deep tissues, effectively bypassing these thermoreceptors, particularly if the field is at near-resonant frequencies. The resulting temperature profile may well be a kind of reverse thermal gradient in which the deep tissues are warmed more than those of the surface. Since the heat is not conducted outward to the surface to stimulate the appropriate receptors, the organism does not "appreciate" this stimulation in the same way that it "appreciates" heating and cooling of the skin. In theory, the internal organs of a human being or an animal could be quite literally cooked well-done before the animal even realizes that the balance of its thermomicroclimate has been disturbed.

Until a few years ago, microwave irradiations at equivalent plane-wave power densities of about 100 mW/cm<sup>2</sup> were considered unequivocally to produce "thermal" effects; irradiations within the range of 10 to 100 mW/cm<sup>2</sup> might or might not produce "thermal" effects; while effects observed at power densities below 10 mW/cm<sup>2</sup> were assumed to be "nonthermal" in nature. Experiments have shown this to be an oversimplification, and a recent report suggests that fields as weak as 1 mW/cm<sup>2</sup> can be thermogenic. When the heat generated in the tissues by an imposed radio frequency (plus the heat generated by metabolism) exceeds the heat-loss capabilities of the organism, the thermoregulatory system has been compromised. Yet surprisingly, not long ago, an increase in the internal body temperature was regarded merely as "evidence" of a thermal effect.

### PASSAGE 3

Since World War II considerable advances have been made in the area of health-care services. These include better access to health care (particularly for the poor and minorities), improvements in physical plants, and increased numbers of physicians and other health personnel. All have played a part in the recent improvement in life expectancy. But there is mounting criticism of the large remaining gaps in access, unbridled cost inflation, the further fragmentation of service, excessive indulgence in wasteful high-technology "gadgeteering," and a breakdown in doctor-patient relationships. In recent years proposed panaceas and new programs, small and large, have proliferated at a feverish pace and disappointments multiply at almost the same rate. This has led to an increased pessimism—"everything has been tried and nothing works"—which sometimes borders on cynicism or even nihilism.

It is true that the automatic "pass through" of rapidly spiraling costs to government and insurance carriers, which was set in a publicized environment of "the richest nation in the world," produced for a time a sense of unlimited resources and allowed to develop a mood whereby every practitioner and institution could "do his own thing" without undue concern for the "Medical Commons." The practice of full-cost reimbursement encouraged capital investment and now the industry is overcapitalized. Many cities have hundreds of excess hospital beds; hospitals have proliferated a superabundance of high-technology equipment; and structural ostentation and luxury were the order of the day. In any given day, one-fourth of all community beds are vacant; expensive equipment is underused or, worse, used unnecessarily. Capital investment brings rapidly rising operating costs.

Yet, in part, this pessimism derives from expecting too much of health care. It must be realized that care is, for most people, a painful experience, often accompanied by fear and unwelcome results. Although there is vast room for improvement, health care will always retain some unpleasantness and frustration. Moreover, the capacities of medical science are limited. Humpty Dumpty cannot always be put back together again. Too many physicians are reluctant to admit their limitations to patients; too many patients and families are unwilling to accept such realities. Nor is it true that everything has been tried and nothing works, as shown by the prepaid group practice plans of the Kaiser Foundation and at Puget Sound. In the main, however, such undertakings have been drowned by a veritable flood of public and private moneys which have supported and encouraged the continuation of conventional practices and subsidized their shortcomings on a massive, almost unrestricted scale. Except for the most idealistic and dedicated, there were no incentives to seek change or to practice self-restraint or frugality. In this atmosphere, it is not fair to condemn as failures all attempted experiments; it may be more accurate to say many never had a fair trial.