to the long-term downward trend, which had been interrupted as a result of wartime deprivation. The experience of Ceylon fails to substantiate the thesis that postwar mortality has been reduced quite independently of the levels of living. Attention is invited to detailed published evidence (*1*).

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Reference

1. H. Frederiksen, "Malaria control and population pressure in Ceylon," *Public Health Rept.* **75**, 865 (1960); "Determinants and consequences of mortality trends in Ceylon," *Public Health Rept.* **76**, 659 (1961); "Economic and demographic consequences of malaria control in Ceylon," *Indian J. Malariol.* **16**, 379 (1962).

Medical Education: Open Minds and Fragmentation

E. Grey Dimond's provocative letter [*Science* **142**, 445 (25 Oct. 1963)] should raise eyebrows as well as hackles among medical academics. He exposes for all to see that complacency, at least, is not one of the major sins in the medical schools, and for that we should be grateful. But Dimond should consider that, somewhere along the line, already-existing facilities have produced physicians who have gravitated into many varied fields after leaving medical school. Even now we have physicians trained under apparently hopeless curricula who nevertheless work in those ivory towers which are so essential to the continuing development of medical care, not only for the individual, but for society as a whole.

The crux of the arguments pro and con must not be disregarded, namely, that what we are ultimately striving for is *care*, care of the individual over his lifetime. Some provide this obliquely and impersonally, in the laboratory. Others provide more personal care at the bedside or in the office.

Some medical faculties may be excessively egotistical in their presumptions, believing that what happens during the 4 years in medical school alone will set an unalterable pattern for the growth of the individual physician as he matures. This is simply not so. Much that determines what a physician will do in his profession occurs after he leaves the ivied halls; much depends upon the training he received long before he reached the medical school. Unfortunately, much of what physicians learn in medical school is no longer believed to be true a dozen or so years later. The habits they acquire there, however, and their basic orientation to the patient as the ultimate focus of attention are things they must always carry with them.

Many physicians now in basic medical research institutions have developed their research interests and talents after graduation. It is a truism that most freshmen medical students want to be family doctors. Most seniors have had more doors opened to them and have thereby developed more diversified interests. Relatively few end up as family doctors.

It would seem to me that a more useful argument for medical faculties to address themselves to would be, Which students should be admitted to medical school? For regardless of what is taught, what really matters is how the physician will approach problems in medicine in an ever-changing milieu. By choosing bright students with open minds, medical schools will provide the raw material for the development of individuals with a broad spectrum of interests and talents in the field of medicine, ranging from the enzyme chemist with an M.D. and a Ph.D to the country practitioner with an M.D. and a Rotarian's pin.

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Dimond points up a broad problem in medical education: how much training should be given in basic biological and physical-chemical disciplines in proportion to the various clinical disciplines. Dimond is a proponent of more training in the basic sciences at the expense of the clinical sciences. I am skeptical of this proposal for two reasons. First, the medical student already spends about half his time in the preclinical studies after about two years of the same in his college preparatory work. In contrast he has only about two years to devote to a large mass of clinical studies.

But the more important reason is related to the underlying, though only implied, concepts of the physician involved in the controversy. The kind of "biological scientist" Dimond's program would produce would be one geared to working only in a team of highly trained and specialized men in a medical center, though how these would be integrated is an open question. At any rate, these would be a kind of elite at the top of the pyramid. As they could not actually take care of the total load of work, a need and an impetus would be created for second-class practitioners to perform the rest or the bulk of the work. These would most likely be technicians of limited background, training, capacity, and function. This kind of fragmentation is nothing new. Long ago, in Egypt, a small elite of engineers and architects planned the pyramids and other great works; the job was then finely segmented and performed by slaves. In recent years similar fractionalization has been partially and variously instituted, notably in industry and in the engineering profession. Similar manifestations have taken place in the medical profession. A recent writer described the German doctor as a hospital-referring agent. In Czarist Russia (the Soviets changed the situation quantitatively only) the large bulk of physicians were poorly trained; we would call them medical technicians. The relatively few who were highly trained were located for the most part in the medical centers. In contrast, in this country, as in England (the National Health Service notwithstanding) and in spite of specialization, the family doctor is highly trained and still does an integral job in a large segment of the practice of medicine.

There are many challenging problems in medical education. I believe Dimond's suggestions are related to some free-floating, aggressive trends in our culture, finding expressions even in science in many forms of atomization, forms which are neither very new nor as benign as they appear. Rather we should confront these problems with the insights newly acquired by depth psychology about the nature and complexities of the human individual, which point to integration and sanity in work as in life.

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Glauber's comments elude me, at least in relation to what I thought I was saying in my letter. I am afraid he extrapolates my words to fit his arguments, free-floating and otherwise, and I must reject the role in which he wishes to place me. Any thoughts of mine on medical education have been based on the belief that the major product should be a personal physician.

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