Abridging Medical Education

My reaction to Walsh's article "Medical education: Carnegie panel urges expansion, acceleration" (13 Nov., p. 713) is that such expansion and acceleration may produce unexpected advantages. The demand that a larger amount of knowledge be acquired in a shorter period of time could foster a change in the attitudes of physicians toward continuing education. On the other hand, there is the danger that it will only further increase the current resistance of the physician to expose himself to future learning. Physicians too often assume a facade of omnipotence today as a defense against the unrealistic public and professional expectations that they should have a command of the vast total spectrum of medical knowledge. An obligation to continue one's education would threaten this facade by requiring a confrontation with deficient areas of knowledge. There must always be a lowering of defenses if new knowledge is to be accepted. It is certainly questionable whether continuing education can be acquired simply by attending symposiums at medical conventions and by following the literature in specialty journals.

One need in medical education is to instill the continuing spirit of inquiry in every student. This spirit has frequently been lacking in the exchange between professors and students because the faculty is required to encapsulate knowledge and deliver the final unassailable truth. There is often a general atmosphere of grandiosity, fostered by the public's needs, accepted by the teachers, and transmitted to the students in the medical schools.

This atmosphere may be changed if the students are to be given less time for preparation without the goal of acquiring total knowledge. The shorter training period may reveal to the students gaps in their preparation which will encourage them to obtain continuing (throughout life) education—a step that is necessary if one is to use his potential to the maximum. These changes may not only increase the number of physicians, but they may continue to improve the breed.

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The Carnegie Commission's report calls for increasing medical school enrollment by 50 percent in 7 to 8 years, and an even greater increase in paramedical personnel—a very big order. In 1910 the Flexner Report led to improved medical education, and specialization and research orientation in academic medicine. If this Carnegie report is heeded seriously by medical educators, it should lead to a better system of health care.

One recommendation—shortening the period of medical training from 4 to 3 years should probably not be combined with another recommendation that the internship be eliminated. I would suggest that a medical student might consider either a 3-year medical school *or* skipping the internship, but not unless, of course, he does not plan to practice medicine.

Further, the Carnegie Commission proposes the creation of a "midpoint degree," after which the student could pursue the M.D. or Ph.D. curriculum or take employment as a teacher or as a medical assistant or associate. The last options would be better named research assistant or associate rather than medical, since one learns science and biology early in medical school, not medicine. An appropriate title for the "midpoint degree" might be master of science (M.S.) in human biology.

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Industry and Academe: Closer Ties

This may be an opportune time to consider closer integration between industrial requirements for research and development and academic or institutional basic research programs. Federal funding is no longer adequate to support a normal rate of growth of the basic research structure in universities built up over the last 15 years. Also, there are several advantages in forming closer ties between basic research and industry. The selection of basic research problems (from an otherwise infinite range of choices) can be made more directly in the public interest. Also, basic research will have available a very large addition to its funding sources apart from the usual federal agencies (Department of Health, Education, and Welfare, National Science Foundation, Atomic Energy Commission, and others). To achieve this integration of goals, some federal funding, administered possibly through the National Academy of Sciences, will be required to provide lists of cooperating industries and to circulate grant proposals to relevant industries. Also, the possibility of cost-sharing (say, one-third federal funding) should be considered.

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La Porte Precipitation Fallacy

I was pleased to note that Landsberg in his admirable survey "Man-made climatic changes" (18 Dec, p. 1265) recognized the controversial nature of the La Porte precipitation anomaly which too many meteorologists, without close scrutiny of the record, have accepted as a proven case of man-made climatic change. The La Porte rainfall record is a celebrated but specious example of man's inadvertent modification of climate.

During the years 1928–1963 the precipitation for La Porte, Indiana, located some 30 miles east of the Chicago industrial complex, was higher than that recorded at surrounding stations. Meteorologists have been puzzled by this precipitation anomaly. Changnon suggested that the increased precipitation might be due to inadvertent man-made cloud modification resulting from nucleation debris ejected by the industrial activities to the west (*1*). Air pollution in any form is bad, but to blame the Chicago industrial complex for the change of climate at La Porte is most unfair.

The precipitation record at La Porte can be shown (*2*) to be spurious, statistically invalid, and physically unacceptable. (A most ludicrous outgrowth of the belief that the La Porte anomaly is true was the award of a government research contract to a fine university to study the presumed ecological changes in the environs of La Porte because of fictitious excesses of rainfall.)

The rainfall anomaly began in 1927 when a new cooperative climatic observer was appointed and ended in 1964 when an automatic rain gauge installed at La Porte replaced him. Prior to 1927 many of the surrounding stations reported more annual rainfall than La Porte and after 1964 many of the nearby stations also reported more rain than La Porte. However, in the intervening 37 years except for one instance, La Porte always reported the highest rainfall amounts. . . .

A study was also made of many synoptic weather situations, especially in those years which had unusually high rainfall amounts. Trajectory analyses demonstrated that when a west-northwest flow brings effluent nucleation debris to La Porte, either of two events occurs: (i) if it is raining at La Porte, the rain stops, and (ii), if it is cloudy at La Porte, the weather clears. These easily explainable occurrences are hardly conducive to causing excess precipitation. . . .

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References

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2. B. G. Holzman and H. C. S. Thom, *ibid.* **51**, 335 (1970).

Last Word on Yogurt-Making

Being an Armenian by ethnic origin and also a microbiologist, I should perhaps be in a more advantageous position to comment on the making of yogurt than the previous letter writers (Segal, 31 July; Goodman, 9 Oct.; and Bagdikian, 6 Nov.).

Yogurt (*yoghurt* in Turkish; *mādzun* in Armenian; *leben* in Arabic) is curdled or coagulated milk resulting from the fermentation of sugars in the milk by two microorganisms, *Lactobacillus bulgaris* and *Streptococcus thermophilus* (*1*). Both these microorganisms are capable of multiplying at temperatures between 20° and 50°C (*2*) and, with acid formation, ferment a number of sugars including lactose which is the main sugar present in milk. As a result of acid formation the proteins in the milk are curdled or coagulated and the milk attains the yogurt consistency.

Any kind of milk can be used to make yogurt but whole fresh cow's milk often gives the best results. The optimum temperature for the growth of yogurt-forming microorganisms lies within the range of 40° to 50°C. At this temperature range growth is rapid and yogurt formation takes only a few hours. If the temperature falls below 40°C the growth continues but at a slower rate and consequently yogurt formation delays. Multiplication of