enough to allow efficient use of specialists. Therefore, for a period, there is going to be a great need for technical people who can readily shift from one specialized task to another until the marketplace or politics becomes sophisticated and established enough to influence and to justify the training of specialists. One needs only to look into the past of this country to verify this tenet. Specialization in science, engineering, and medicine took place here only after a period of generalized training in these fields. All in all, training of specialized technical persons in a developing country, especially at an early stage, can lead to a greater waste of trained manpower than would a broad education in fundamentals.

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Measuring Racial Differences

In connection with Clark's letter, "In defense of dissent" (5 July), a scientific investigation of possible racial differences in intelligence may be of interest, but I wonder if a truly scientific investigation is possible in present human society? Human beings cannot be gathered into isolated and well-defined categories, as can bacteria, insects, or other types of animals. Every man and woman is a product of the human community and is influenced by it, through education or lack of it, through the media of communication, as well as through encouragements and through threats. Intelligence is not a function of the isolated person, but is a combination of cooperations and antagonisms. Every respondent will bias his replies to investigations or questionnaires according to his conception of the use that he believes will be made of the results. Since problems of racial difference are being so hotly debated, the application of the term "scientific" to a study undertaken in the present epoch of history will be illusory. Such studies should wait until it has been possible for our society to achieve conditions for unbiased research and in which, perhaps, the questions can also be better formulated. Sometimes scientific techniques do well to step aside for a while and give way to discretion until newer insights have developed.

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Teaching: Who Is Being Rigid?

Albert Weiner suggests that engineers and scientists who are contemplating retirement might welcome the opportunity to teach science or math (Letters, 14 June). This letter, like many others, represents what I believe to be wishful thinking on the part of engineers and scientists. I never see letters like this from academicians. For example, I have personally found there is no university or state college in California interested in the services of an individual with a new Ph.D. in applied science and over 20 years of previous experience in engineering and scientific work. They "justify" this view with such comments as "too old," "no teaching experience," "insufficient publications," "too much management experience," "concern about rigidity."

I respectfully submit that anyone who can return to school after 20 years away and get a Ph.D., in competition with the outstanding young men currently enrolled in any good graduate school, cannot be rigid. However, the hardening of the arteries of the academic community is quite apparent and has convinced this writer that teaching is not the place to look for constructive creative work with leaders of the future.

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Frederick II, Natural Scientist

In any list of royal personages (Figueira, Letters, 5 July) who have published scientific papers, surely the Holy Roman Emperor Frederick II of Hohenstaufen deserves mention. His *De arti venandi cum avibus* (1245) was one of the few contributions to true natural science between Aristotle and the Renaissance; the description of the uropygial or preen gland, for example, shows a clearer appreciation of its structure and function than some 20th-century work. Surely the grandson of Frederick Barbarossa should head the list of reigning monarchs with scientific publications, by virtue of seniority over Carlos I of Portugal and Hirohito of Japan.

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