letters

matter..." are unconscionable.

We technical people are experiencing a period of deep and painful readjustment, for sure. The sharp decline of spending on space, the nucleus, and defense, and its shift to people and environment, will result in undiminished demand for technical effort, even though this will take time to formulate and come into focus. The problems calling for technical solutions (aside from those, equally urgent, calling for social solutions) have apparently never been greater or more pressing, and the physicist's capability to contribute to these solutions will in the long run continue to be recognized.

It will help if the physicist recognizes, himself, the breadth of his capacity. Specialization is only habit of thought. Changing fields can always be sharply beneficial both to the individual physicist and his sense of well-being, and to his useful output; fear of venture into totally new problem areas is—to paraphase the old saw—understandable, natural, almost universal, wrong.

It will be wise not to sit back and wait for those overly swayed by philosophical fluctuations to develop the market for our talents for us. The time to wade out into these shifting currents, to identify some of the myriad technical problems and opportunities, to rank these as closely as possible with real human needs—whether short range or long range, local or universal, to take the responsibility for initiating work toward their solution (and incidentally to support ourselves in the process), is now. The one to do it is he who is best prepared to do it. Have a look in the mirror.

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Handicapped groups

In response to your editorial in the April issue (page 84) you may be interested to learn that several minority-group scientists have organized a national committee [Committee for Minority Participation in Physics, W. E. Henry, chairman (Howard University), F. R. Norwood, co-chairman and secretary (Sandia Laboratories)] to augment the development of scientists and technicians among the minority societies. One of the principal problems faced by this committee will be finding ways to bring this effort to the attention of members of minority groups who may not realize that a small number of their members *have* survived the obstacle course. Several means come to mind, and some avenues will be explored with firm determination, but it is to be noted that placement of minority-group persons may test the extent to which the present-day scientist's objectivity has been conditioned by his social environment.

It seems clear that the long periods during which the occupations open to the minority members have denied them a prestige education—short of living a Spartan routine—have taken their toll. It is no longer a question of working at peak efficiency just to keep up; rather, the question will be in what manner and how soon minorities may reach the starting gate. It is also clear as a result of our recent enlightenment on the plight of the minority-group member that he should not be flatly denied should he ask for more than the average assistance to help begin his career.

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X-raying biomolecules

In his article "Mossbauer spectroscopy and biophysics" (February, page 35) Charles Johnson states that "because biological molecules have high molecular weights (between 10^4 and 10^6 g/mole), they are not amenable to structural analysis by x-ray diffraction." Max Perutz was awarded the Nobel prize for the structure of hemoglobin (molecular weight 6.6×10^4) determined by x-ray diffraction analysis. Since that pioneering work, many other molecules with molecular weights in the range 10^4–10^5 g/mole have also been successfully studied. No structures with molecular weights in the range 10^5–10^6 have yet been determined, but there are no insuperable obstacles to success here. Further, Johnson suggests that knowledge about the state of the iron in iron-proteins is sufficient to understand how the molecule works. This idea grotesquely oversimplifies the complexity of the problem. For example, cooperative behavior among the subunits of hemoglobin can only be understood with the full, three-dimensional structure of the molecule in hand.

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The author comments: Lattman is quite right in pointing out that the beginning of the article oversimplifies the problem of understanding biological molecules. The article was an edited version of a paper presented to the Magnetism and Magnetic Materials conference in Miami. The offending distortions were introduced in the editing process and were not caught by me when I approved the edited version forwarded

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