LETTERS TO THE EDITOR

Letters are selected for their expected interest for our readers. Some letters are sent to reviewers for advice; some are accepted or declined by the editor without review. Letters must be brief and may be edited, subject to the author's approval of significant changes. Although some comments on published articles and notes may be appropriate as letters, most such comments are reviewed according to a special procedure and appear, if accepted, in the Notes and Discussions section. (See the "Statement of Editorial Policy" in the January issue.) Running controversies among letter writers will not be published.

THE PLANCK STROLL

Recently Greenstein and Kropf[1] once again discussed the question of a possible anthropic origin of the values of the fundamental constants. In such an argumentation one usually raises questions as to a possible "explanation" of the values of the fundamental constants through the mere fact of the existence of humans as observers of the universe. Also it is often argued that only very slight variations of the fundamental constants would render the evolution of life impossible. Though Greenstein and Kropf argue for the dismissal of both viewpoints, I here present evidence that the fundamental constants might have some explanation not through the existence of humans but through their personal comfort. This evidence rests on the general surmise in field theory that, in colloquial terms, something important happens at the scale of the Planck length. This length is so exceedingly small, $L = (\hbar G/c^3)^{1/2} = 1.6\times10^{-35}$ m, that it seems it could not possibly have any direct significance for humans. Yet, there is another length, the de Broglie wavelength $\lambda = h/mv$ of humans, of which it is also usually said that it is too small to be of any import. Interestingly, if we calculate the latter wavelength for, say, a person of 70-kg mass strolling forth with the comfortable speed of 2 ft/s (0.6 m/s) we obtain just the value of the Planck length! Certainly, I suggest, this cannot be accidental in such a well-contrived universe as ours. We might very well call that state of motion in which an individual's de Broglie wavelength is the Planck length a *Planck stroll* and preliminary evidence indicates that the resulting speed is the most comfortable and relaxing one for that individual given ideal unperturbed conditions. Unfortunately, such ideal conditions are very hard to find in our technological society and this may explain the complete absence—to our knowledge—of any relevant observational data. In view of the possible significance of the anthropic principle, it is evident that such studies should urgently be made. Clearly, one has to investigate populations where the necessary relaxed way of strolling has not succumbed yet to the more impetuous modes of locomotion found in our society at large. Places favorable for such a study are, e.g., those small Italian towns where the time-honored custom of the *passegiata* when everybody strolls out on the street in the evening is still in practice. My own first rather unsystematic investigation there confirms not only that the observed speeds of humans are of the right order of magnitude for a Planck stroll, they also hint at confirmation of another prediction of my hypothesis, namely, that the Planck stroll speed should be inversely proportional to an individual's mass.

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[1]G. Greenstein and A. Kropf, "Cognizable worlds: The anthropic principle and the fundamental constants of nature," Am. J. Phys. **57**, 746–749 (1989).

THE INTRODUCTORY PHYSICS COURSE—CAN WE IMPROVE IT?

In his "Guest Comment," Arnold Arons[1] takes the Introductory University Physics Project to his well-used woodshed. I would like to argue that Arons has pounced prematurely and, I hope, misguidedly.

First, let me say that I fully agree with what I take to be his central message. I quote from his piece: "...[A] student must be given more time rather than less, more verbal and phenomenological experience rather than less, to master basic concepts and acquire command of lines of reasoning." The Introductory University Physics Project, from its inception, has had as one of its touchstones the desire to decrease "coverage." Its other unchanging goal has been a desire to integrate into the introductory course a heavier emphasis on the physics of the 20th century than has been common. I believe that lying just below the surface of the Arons argument is an assumption that these two goals are mutually incompatible. I, for one, do not believe that such is the case.

Arons has pounced on various bits and pieces of the preliminary output of several IUPP study groups and turned his impressive firepower on them. "Arnold, hold your fire until you see the whites of our eyes!" In the early stages of any project of this sort, various participants have various initial perspectives and ambitions. The output of this stage is untested and tends to be overly ambitious. Scratch any physicist and you'll find a zeal to transmit beautiful pieces of physics to eager students. It is the challenge to IUPP, as to any similar project, to become student centered rather than content centered as it works toward classroom trials of honest-to-gosh teaching material.

There are, I believe, certain other unstated assumptions that lie behind the Arons piece. (1) I'm guessing that Arons has in his mind a student who is virtually a blank slate insofar as physics is concerned when he or she enters the university physics course. If we are doomed to have that situation persist forever, then we will certainly be operating with one hand tied behind our backs as we seek an effective university physics course. (2) I suspect that Arons views mastery of the concepts and structure of classical mechanics, in particular an intuitive feeling for the concept of acceleration and a deep understanding of how Newton's second law provides such a powerful tool for analyzing motion, as the gate through which all physics students must pass in order to achieve some useful knowledge of the methods and content of the discipline. I believe there are alternate choices that can