ever, is name-bearing; this makes strict adherence to the law of priority imperative. Therefore, substitution of a new type species of a genus for an already established one, as suggested by Schopf, e.g. in the case of *Metasequoia*, is not only not permissible under existing rules[1] —as he agrees—but even if it were to be permitted by an amendment, it would be bound to create confusion.

Unconsciously Schopf, himself, gives an example of such confusion (p. 483): Should the living and the fossil *Metasequoia* prove to be really congeneric—a fact not yet established beyond doubt, according to the author—and should, furthermore, his above proposal be accepted and incorporated in the Rules, then, he suggests, the genus "should be cited for type reference as *Metasequoia* Hu and Cheng, *non* Miki." However, such a way of citing has always implied, and obviously still implies, that Hu and Cheng (the authors of the living *Metasequoia*), on the one hand, and Miki (the creator of the genus *Metasequoia*, based on a fossil species), on the other, applied the same name to two different genera, whereas in the present case the species to which both authors apply this generic name are congeneric, according to Schopf's own premise. Thus, the same name means also the same thing. It would seem that no better *reductio ad absurdum* could be thought of for Dr. Schopf's proposal.

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The Human Engineering Seminar at New York University

Readers of *Science* are likely to be interested in learning about a pioneering effort in the cross-fertilization of ideas from many scientific fields which is currently being made in the College of Engineering, New York University. The present Seminar in Human Engineering, which is a continuation of a more informal series of sessions held during the spring of 1948, is sponsored jointly by the College of Engineering and the Institute of Industrial Medicine of the College of Medicine.

Human engineering, as conceived by the seminar participants, is a rapidly expanding branch of applied science which is concerned with the general problems of the interactions of men and machines. The emerging science of human engineering, which others have referred to as biomechanics, biotechnology, and psychophysical systems research, draws heavily upon the experimental techniques and data of engineering, the biological sciences, the medical sciences, psychology, and certain of the social sciences, notably anthropology, all of which are concerned with the conditions under which man works and the factors associated with optimal performance with machines.

Sessions of the Human Engineering Seminar have attracted representatives from virtually all of the the professions whose mutual interests find expression in the seminar. Each session, although devoted to a consideration of a limited segment of the field of human engineering, has proved useful to various professionals in attendance in suggesting ways in which the data and principles from another science can be applied to the study and evaluation of problems in their area. Among those attending the meetings there has developed a deepened appreciation for the cross-disciplinary approach which characterizes the papers presented, and this appreciation is grounded in the experience of learning to think within the framework of an often alien point of view.

As a result of a number of seminar sessions, the major problems and issues of human engineering have begun to emerge and to clarify themselves, and there is a growing acceptance among participants of the need to fashion practical working procedures for the team approach to the resolution of pressing research problems from many sciences which find concrete expression in this field.

To indicate the trend of thinking among seminar members, it is useful to glance at the broad areas which have been considered. Arthur Lefford, of the College of Engineering, presented a psychological approach to "The Present Status of Fatigue," in which there was a serious effort to understand problems of fatigue within the context of motivation as a psychological process. "An Over-All View of Personality for the Human Engineering" sought to advance the notion that in human engineering research man has for too long been considered either a machine or machine-like, and that it is time now to concern ourselves with the attitudes, motivations, and other personality characteristics and processes of men in relation to the design and operation of machines.

The session on "Environmental Factors in Human Engineering," led by Norton Nelson, of the College of Medicine, New York University, sought to present facts and principles from physiology which have a direct bearing upon human engineering research inquiries. Although devoted to certain selected problems in the thermodynamics of human behavior, the presentation suggested clearly the broad values of the physiological approach to human engineering. Matthew Luckiesh, of the General Electric Lighting Research Laboratory, in his paper, "The Human Seeing Machine," sought to make clear the enormous number of problems confronting the illumination engineer in a consideration of even the simplest human engineering inquiry in the area of illumination.

Other papers on "The Present Status of Principles of Motion Economy" and "Anthropometric Data in the Design and Operation of Machines and Equipment" highlight other interests of seminar members. These and other papers presented before the Human Engineering Seminar have been informally published as "Contributions to Human Engineering" and are already finding use in the work of those who ally themselves and their research with the human engineering point of view which the Seminar has sought so earnestly to develop.

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[1] Analogy with neotypes for species whose original type has been lost or destroyed would not be justified, even if the situation were similar, which it is not; for the types of species are physical specimens, but those of genera are species, which are mental concepts.