individual, but I am wondering if we are not really thinking of our present recollection of the passage of time in youth and in later years rather than of the actual feeling of the passage of time that we experienced as it passed. Of course, no individual can compare his own time sense with that of any other individual, younger or older, because such sense is purely subjective and there is no basis of comparison; and it would seem practically impossible, too, for any of us to remember just how fast the days and months seemed to go by at any particular period in his past, so that here again we have no good basis for comparison. We can, however, compare the elapsed time between the remembered events of our past as they now lie in our memories. In my own case the elapsed time between my tenth and my twentieth years, for instance, seems much greater as I look back upon it than that between my fortieth and fiftieth. The reason for this I believe to be that in later years things that happened after we reached maturity seem much nearer *in proportion* than the events of childhood and youth, and this because we feel that they might have happened only yesterday, whereas the youthful happenings belong to another age.

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I HAVE read with much interest the papers recently published in SCIENCE as a sequel to a first discussion inaugurated by Frank Wilen some time ago on the "Apparent Time Acceleration with Age." However, I was surprised at the purely psychological treatment of the question and at the fact that all your contributors seemed to think that they were dealing with a new subject. May I remind them that the problem has been thoroughly investigated since 1916, when the first paper on the influence of age on the process of cicatrization was published in the *Journal of Experimental Medicine* (xxiv, 461), then in the *Proceedings* of the American Philosophical Society (1917) and later in the C. R. Ac. Sc., etc. The notion of "physiological time," different from physical time and its method of measurement, were introduced by the writer and discussed by many authors in this country, Professor Hoagland among others. It was fully developed (mathematically and psychologically) in a book published six years ago in New York.[1] Last year, at the April meeting of the American Philosophical Society, the writer presented a paper in which the different aspects of the question were expounded at length. An interesting discussion followed. I feel certain that Messrs. Carlson, Abbott and Harriss will be interested by the odd ten papers and the two or three books dealing exhaustively with this problem in a strictly scientific way, published up till 1936 in the United States, England, France and Germany. The most important references are to be found in the book mentioned below.

P. LECOMTE DU NOÜY

[1] Lecomte du Noüy, "Biological Time," Macmillan, N. Y., 1937.

THE SCIENCE MOBILIZATION BILL

THE letter from Dr. Leland H. Taylor on the Science Mobilization Bill (SCIENCE, November 26) seems to miss the point. He bases his argument on generalities, which are no answer to the specific objections to the specific provisions of the Kilgore bill which its opponents have adduced.

For instance, Dr. Taylor formulates two "pertinent" questions. The first reads, "Does our present organization of science promote the fullest advancement of scientific knowledge?" Since no human institution is perfect, the answer is obviously "No," but how helpful is it in determining whether the specific provisions of the Kilgore bill will accelerate or retard that advancement? Precisely the same comments apply to Dr. Taylor's second question.

Dr. Taylor seems to take at face value certain sweeping charges against industry which have been made in Washington. Does an accusation amount to proof which a scientist should accept? Has Dr. Taylor read the detailed refutation of many of those charges? He complains that only "a few liberal journals of small circulation" (does he so characterize *The New York Times* and *New York Herald Tribune,* which gave full space to those charges?) printed the accusations. The fact is that the charges were given much more space than the subsequent refutations, which may explain why Dr. Taylor missed the latter.

But even if the charges are accepted as proof, the case reads about as follows: Industrial research has resulted in inventions; inventions have been patented; and patents have in a few cases been unfairly used to extend monopoly beyond the bounds of the legitimate restricted monopoly which every patent confers. Therefore research must be reorganized and put under different control. An analogous case would be—research has produced a new and better alloy; that alloy has been used to make better knives; a few individuals have used those knives to commit murder. Therefore we must reorganize metallurgical research and put it under different control. Would it not be more logical to enforce, and strengthen, if need be, the laws against unfair restraint of trade and homicide?

Finally Dr. Taylor makes much of "selfish interest" as the mainspring of present industrial research, and condemns it. Others call it "enlightened self-interest," and praise it. What other motive force would Dr.

Taylor suggest short of compulsion? After all, the two phrases differ essentially only by the word "enlightened." Discussion such as Dr. Taylor's may further enlightenment, but what has it to do with the virtues or faults of the specific provisions of the Kilgore bill?

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SCIENTIFIC BOOKS

MAN

Man Real and Ideal: Observations and Reflections on Man's Nature, Development, and Destiny. By EDWIN GRANT CONKLIN. xvii + 247 pp. New York: Charles Scribner's Sons, 1943. $2.50.

IN 1921 Charles Scribner's Sons published Professor Conklin's "The Direction of Human Evolution." An important philosophical discussion, this volume was scarcely appreciated because the publishers failed to do anything much in calling it to the attention of scholars. It is sincerely to be hoped that the same fate will not follow the present book. It richly deserves the widest possible distribution and consideration.

As president of the American Philosophical Society, Dr. Conklin is most appropriately filling his position by significant philosophical leadership, at a time when the whole world needs a clear exposition of the philosophical implications of science. Our current philosophers are not very helpful. Few of them understand science. Most of them seem to fear it.

Last year *Fortune* published a series of philosophical articles by such leading American philosophers as Hocking, Sperry, Montague and Maritain, most of whom clung tenaciously to scientifically outmoded positions of intuitionism, mysticism and philosophical idealism. The net impression was that the best to be offered by American philosophy for the future of the world is reliance on wishful thinking and the support of supernatural agencies. It seems to have taken an Englishman to suggest something more worthy of intelligent consideration. *Fortune* was kind in accepting an article from Julian Huxley giving a brief but clear statement of the philosophical implications of modern science. This appeared in December, 1942. It is remarkable that current philosophical problems should after all be important enough for the attention of business men and executives for whom *Fortune* is designed. It is regrettable that the editors of *Fortune* failed to include Conklin in the symposium.

Dr. Conklin agrees with Huxley that the state of our present knowledge of ourselves and our environment leaves little room for hoping that supernatural powers exist to bring us the salvation we crave. Science seems to indicate that responsibility for the future of mankind is on the shoulders of men.

That the implications of our developing verifiable knowledge of ourselves and our environment, as revealed by scientific inquiry, have significant moral consequences is a conclusion reached by many competent biologists. The statements made by C. Judson Herrick (*Sci. Monthly,* 49: 99, 1939) and S. J. Holmes (SCIENCE, 90: 117, 1939) agree with those expressed by Conklin. In a remarkable discussion aroused by C. H. Waddington ("Science and Ethics," London, 1942) there is further agreement with the conclusion that our morals are phases of our adaptation to our environment, and thus enable us to develop control of some of our evolutionary progress. It remains to be determined whether or not there is a naturally operative principle regarding human relationships which may have ethical significance. A tentative formulation of such a principle has already been attempted (*Nature,* 141: 783, Dec. 27, 1941).

Dr. Conklin appreciates very clearly what he is doing: "The results of the scientific study of man and philosophical conclusions that are derived from such a study run counter to the inherited traditions and cherished beliefs of multitudes of persons." He is convinced that all phases of human nature are amenable to scientific treatment and must be studied, if studied at all effectively, by scientific methods. These methods consist of careful, systematic, verifiable observations of phenomena, and logical deductions as to their causes, which deductions are then tested by further observations, and, whenever possible, by experiments aimed at isolating various factors or causes. As a biologist, Professor Conklin emphasizes the importance of biological methods in dealing with men. These methods are comparison, analysis, and experiment.

The volume offers a well-organized, comprehensive and brief survey of our present knowledge regarding the human species, tracing the past evolution of man, and discussing paths of progress, natural selection and organic selection as factors in progress, the role of eugenics, and future factors in the evolution of man.

Conklin clearly indicates the conclusions which the biologist must reach on the time-honored mind-body problem—that no distinction is valid. An assumed distinction is as semantically invalid as that between what is considered to be living from that which is thought to be dead.

Dr. Conklin then considers the development of the individual, with discussions of asexual and sexual reproduction, and factors in development, with a careful treatment of mechanisms of differentiation involving cells, chromosomes and genes. In discussing rela-