THE VOGUE OF THE POPULARIZERS

By Kenneth M. Gould

THERE is in the periodical press and in publishers' book lists of the day a rising tide of "popularization of science". A new profession emerges — that of mediator between the mental habits and vocabulary of the man who knows the *rerum natura* and those of the man who does not know, or perhaps, more accurately, of the man who knows something else — bonds, say, or soap making. These middlemen may be scientific originators themselves (vide William James, Beebe, Fabre), though, if they are, they seldom have time or inclination to devote themselves to a popular audience. More rarely they may be men of letters (Maeterlinck, Wells). But the creative writer is not wont to forsake his legitimate domain for a second hand authority. In the main they are a distinct species — the synthetic minds as opposed to the analytic, who are sufficiently initiated into the mysteries to know their way about, but who will never themselves be first rank contributors to the advance of research. Is their function therefore inferior to those of the great practitioners in either camp? Is this tendency toward a democratization of technical knowledge merely another of the snares of mediocrity? Possibly. But we know

that such men are necessary to our happiness. We know that we cannot live in this specialized world without a corps of interpreters at our elbows. And many thinkers, like Professor Giddings or Professor Robinson, contemplating with alarm the widening chasm between the minority of superior minds who are in a measure conscious of the nature and interrelations of the universe, of matter and energy, of organic life, of man himself, and the compact majority who are impervious to these things, see in some bridging of the gap, some filtering down of insight, some socialization of exact science, a strait but imperative path away from catastrophe.

None of the popularizers has been more successful than Dr. Edwin E. Slosson in capitalizing the human-interest value of science. Himself a chemist by profession (his best known work is "Creative Chemistry"), he combines first hand authority in this field with a universal interest in the other sciences, and with a sympathetic grasp of literary modes. For many years he was literary editor of "The Independent", and his book in collaboration with Dr. June Downey, "Plots and Personalities", lays bare some of the mechanics of popular fiction. As director of Science Service, he exercises a profound influence both on the scientific world and the wider public.

Dr. Slosson's latest book, "Chats on Science", is a potpourri of eighty five short articles, previously syndicated through the newspapers, which reveal his method and his appeal. They are catchy of title, lucid of diction, fertile of allusion, and astonishingly ingenious of illustration. They bring all manner of complexities down to the level of everyday "chattability". In his "Einstein primer" (one of Dr. Slosson's hobbies) he has actually written a description of the theory of relativity in words no one of which is more than one syllable long. This is a gymnastic *tour de force* which proves that simplicity is not always synonymous with clarity. Some of his other Einstein papers — on the deflection of starlight in the solar eclipse photographs of Dr. W. W. Campbell, and the curvature of space — are more edifying.

An analysis of the subject matter of the chapters throws some light on Dr. Slosson's predilections. By a very rough classification (which I should not like to have to defend in detail) they group about as follows: general or historical science, 20; chemistry, 18; physics and mechanics, 13; medicine, hygiene, bacteriology, and physiology, 11; biology, botany, zoology, and agriculture, 11; psychology and psychiatry, 4; astronomy, 3; philology, 3; geology and physiography, 2. The general sketches are mainly disarming preachments to the laity on salvation by scientific method. Throughout the papers Dr. Slosson throws his spotlight upon the creative figures of science or letters. Such moments are the stories of Kekulé, and how in a semitrance he hit upon his ring formula for the benzene molecule; of Byron's blunders in prediction; of Franklin and the two forms of electricity; of Dr. Spaeth and his "iron nerves". The patina of antiquarianism encrusts many of Slosson's pages. He has delved into forgotten documents and is never so happy as when exposing some irrational opinion of the past, often with a satirical twist on the complacencies of the modern mind. On occasion there crops out a vein of ethics. It is the popularizer's justification for translating science into the vernacular:

"The eugenist says to the infatuated youth, 'That girl is no fit mother for

your children.' And he answers, 'What of it? I want her.' "

Science can supply the facts, says Slosson. But it is not her business to thwart the abuse of poison gas or the waste of natural resources. Religion must supply the motive.

The Slosson of Great Britain is John Arthur Thomson, regius professor of natural history at Aberdeen University (not to be confused with Sir Joseph John Thomson, the great Cambridge physicist). Professor Thomson's four volume "Outline of Science", following in the wake of Wells's "Outline", has put within the reach of many thousands of English speaking readers the "stuff of respectable thinking". In his new book, "Everyday Biology", one of Doran's Modern Readers' Bookshelf, he returns to the field of his own study — natural science. It, also, is a collection of papers from periodicals.

"Everyday Biology" would not qualify as a college text. It aims to inculcate what might be called the biological habit of thought in the average man. Life, it says, is a unity, marked by the same properties that distinguish it from the inorganic on each successive plane from the unicellular animalcule, through the metazoa, mollusca, vertebrata, aves, mammalia, and primates, to Homo Sapiens. The "irritability" of the sponge is of a piece with the sensitivity of the receptors in the nervous system of man. The stoking of the human engine with predigested fuel generates the same process of oxidation that takes place in the amœba: one merely utilizes more highly organized fodder than the other. The book would be an ideal tract for the heathen sunk in the degeneracy of Bryanism, could they be induced to read it. It should be impossible for any halfway honest and literate person to read this primer without a consciousness that man is made of the same dust as every other living thing, that his higher powers of speech, conceptual and abstract thought, and control of his environment are different only in degree, not in kind, from those of creatures he is pleased to look upon as "lower". The book attains this effect without exhortation or assertion. It is simply a statement of known facts about living matter and its behavior. Its language is that of the farmyard, the trout stream, the kitchen, the shop, assuming no background but that of interest.

If there were needed arguments for the essential truth of the laws of heredity, nothing more convincing could be adduced than the family history of the biological prophets. The genius of the Darwin-Galton-Wedgewood tribe is well known. The family of Darwin's great interpreter, Thomas Henry Huxley, deserves equal publicity. His son Leonard is a distinguished classical scholar of Balliol and St. Andrews. The third generation consists of Aldous, creator of "Crome Yellow" and "Antic Hay", and his elder brother Julian. Julian Huxley is compounded of about equal parts of biological student, man of letters, and social philosopher. He lectures at Oxford, but was for several years on the faculty of Rice Institute, Houston, Texas.

His "Essays of a Biologist" transcend the realm of elementary fact and venture forth into the wilderness of philosophic speculation, though always within the capacity of the general reader. Progress, religion, sex psychology, the hierarchy of the social sciences, and relativity are typical of the themes that attract him. Each essay is preceded by an original Huxley poem, revealing a pretty talent for lyric feeling, subtle irony, and a

feathery touch in subjects ordinarily thought insusceptible to versifying. Traces of the academic paraphernalia appear in footnote references and bibliographies.

The quality of Mr. Huxley's ideas is not so profound as it is inclusive. He is alive to the best thought in the files of time, from Socrates to Jung. He is fortunately aware that creditable scientific work has been done in countries other than England. He speaks for no sect or ism. He belongs, in fine, to that engaging but seldom realized category of "humanist".

Huxley's fundamental passion is for a spiritual rationalism. The modern disciplines have made untenable to most scientific men such long established concepts as a personal God. Huxley would hasten, rather than hinder, the pruning process. But he is conscious of values the loss of which would impoverish life. Religion has escaped the bounds of prayer, sacrifice, "conversion", ritual, and communal worship. Much of its service to man is being realized by increasing numbers through cognate experiences — love, the arts, intellectual discovery. Science must construct the intellectual scaffolding, the common vehicle, for the religion of the future. But the human species is yet near the beginning of its evolutionary career, and man has before him vast tracts of time to set against the vastness of his tasks.

The acid test of the worth of all this predigested knowledge lies, as Slosson has suggested, in conduct affecting the future of the race. It is no serious dilemma to decide between alternating and direct current as the more desirable for a particular electric circuit. No emotions are involved, no latent instincts, no prejudices (though this could not have been said when alternating current was first introduced in the Nineties). The process is mathematical. But when the individual, in his intimate relations, or as arbiter of group destinies, is called upon to apply the same scientific temper, both technique and sentiment break down. Albert Edward Wiggam has the courage, in "The New Decalogue of Science", to take the average "practical" type of man, in the guise of an anonymous statesman, stand him in a corner, and compel him to face the implications of psychobiological science. Mr. Wiggam has not the attainments in science of Slosson, Thomson, or Huxley. But he knows biological literature, and his pen is vivid, entertaining, and provocative. Readers of his article in "The Century" for March, 1922, on which the book is based, will be interested to see how it has proliferated. The "Five Warnings" and the "Ten Commandments" of science have become as many stalwart chapters, cemented by ethical entr'actes. There is much effusive encomium of Glenn Frank, Raymond Pearl, and others who happen to have coincided with Mr. Wiggam's notions of what a great statesman or scientist ought to be. The one page letter from Mr. Shaw, dragged from him by main force and witheringly answered in twenty pages, adds nothing to the argument, and its printing is in questionable taste.

But I am far from wishing to appear destructive of Mr. Wiggam's effort, for the book is the most stimulating and salutary discussion of eugenics that has appeared since Johnson and Popenoe's "Applied Eugenics". Further, Wiggam sees the industrial problem realistically in the spirit of Carleton Parker, Whiting Williams, and Arthur Pound. He knows that art is a prime essential of life. He is a modified Nietzschean, but against war. His three chapters on the duty of phil-

osophical reconstruction get further toward finding a clue to the modern labyrinth than whole libraries of academic philosophy.

On the main thesis — that heredity is "the chief maker of men" — it is permissible to raise a few queries, however sympathetically one views Mr. Wiggam's position. First, the agreement among students of the genetic sciences on these questions is by no means so perfect as Mr. Wiggam appears to believe. If we could call all his authorities in convention, they would break up in chaos without formulating a practicable program. Politicians, employers, and workingmen should go to school to modern science, he says. And in the same breath suggests such opposite mentors as, on the one hand, Bateson, Davenport, and Frederick Adams Woods; on the other, Walter Lippmann, Bertrand Russell, J. McKeen Cattell, and Thorstein Veblen — environmentalists extraordinary! He uses Havelock Ellis freely to substantiate some of his points, without admitting that Ellis would throw out half his unqualified Weismannism. Even among the biologists, a moderate like Guyer or Conklin can scarcely be said to see eye to eye with Edward East and Thomas Hunt Morgan.

Like most professional eugenists, Mr. Wiggam is long on generalization, short on ways and means. Granted that his diagnosis of civilization is accurate, that his "duties" are worthy heuristic principles, what, specifically, shall we do to bring about a differential birth rate in favor of superiors? Mr. Wiggam has no definite suggestions. Birth control may help in the lower strata. It is not helping in the upper. The thrust of economic and psychological pressure is against the best interests of the race. The givers of the "New Decalogues" must give us more than categorical imperatives.

Chats on Science. By Edwin E. Slosson. The Century Co.

Everyday Biology. By J. Arthur Thomson. George H. Doran Company.

Essays of a Biologist. By Julian S. Huxley. Alfred A. Knopf.

The New Decalogue of Science. By Albert Edward Wiggam. The Bobbs-Merrill Co.