Now the fundamental consideration in the above-mentioned incident is not whether phrenology is a science, or whether it has any scientific basis, or even whether intelligent people should take note of it, but rather it is a question of the advisability of preventing, so far as possible, the expression before college students of views not generally believed by scientists. This lecture, be it noted, had no special sanction of the university, but was a private venture by a group of students in one of their own organizations. Certain it is that a phrenologist has a right to be heard and students not only have a right to hear, but they should be urged to, rather than hindered from, a careful investigation into the errors of any system. If the scientific facts opposed to phrenology are not strong enough to convince people of the fallacies of the subject, then surely no one has a right to prevent the expression of such ideas; and if the scientific facts are all opposed to the phrenological interpretation, then the artificial opposition on basis of authority is entirely useless as well as entirely unscientific. It may be argued that phrenology is not a modern, scientific theory, but an outworn superstition and hence should be discouraged. Without doubt superstitions should be discouraged, not by power of authority, but by scientific facts. Moreover, that which seems to be an outworn superstition may, in another form, appear later as a scientific theory, as for instance, the idea of the transmutation of metals. A few years ago a lecture on the "Transmutation of Elements" would no doubt have found many objectors who would have said that students should not have such foolish ideas placed before them. Now, however, such a lecture would be listened to with great interest because some scientists of high reputation vouch for the possibility of such transmutation. No idea should be smothered except by facts, for all the authority in the world, without good foundation of fact, may be as entirely wrong as the unauthorized idea expressed by the least known student. Further than this also we must go. Any idea, no matter how foolish it may appear, is worthy of attention as a means of stimulating thought and may even have a germ of truth which may develop into more truth by patient investigation. Let us demolish all superstitions as rapidly as possibly by the accumulation of scientific facts, but let us not hinder any propaganda by power of authority. College students should be encouraged to find out all the theories concerning any set of facts and then be led to a careful balancing of these by processes of logical thought.

ERNEST SHAW REYNOLDS

QUOTATIONS

WAR BREAD

THE public has been led to feel some anxiety concerning the effects of the present war bread upon national health and efficiency. Suggestion plays an inevitable part in such a connection. Certain untoward symptoms in individuals, for which some other tangible cause is not immediately evident, are liable just now to be ascribed on the slenderest evidence to the bread eaten. Once the belief in a deleterious influence has arisen, it is easy to understand how widely it may spread by suggestion. In the opinion of those best qualified to know, there would seem to be little basis for any such condemnation of the bread. It rests, nevertheless, with the food controller to obtain the best possible evidence concerning the facts, and we are glad to know that Lord Rhondda and the wheat commissioners have empowered a committee of the Royal Society to make a full and thorough investigation. This committee comprises some eminent medical consultants, as well as the physiologists who have been serving on the main food committee of the society. Its task is to decide whether the higher extraction of the grain can in itself be held responsible for any disturbance of health, and whether the admixture of other cereals with the wheat has produced a less digestible loaf, owing, for instance, to the associated difficulties in milling and baking.

Among other matters which are also engaging the attention of the committee is a greater tendency to "rope" in the bread, alleged to be due to the higher extraction of the grain. The

habits of *Bacillus mesentericus,* which, in its various strains, is responsible for ropy bread, are already well known to bacteriologists, and, empirically at least, to all the better informed among practical bakers. There is no reason to doubt that with the increased knowledge now being acquired any outbreaks of rope will in the future be easily controlled. That the presence in the loaf of cereals other than wheat can be directly harmful is most unlikely. A favorable effect should indeed be seen in a somewhat improved balance in the protein supplied. Maize, it is true, is said to be badly tolerated by certain individuals, though such cases must be rare. It is also stated that the starch of maize is not fully gelatinized when it is cooked in admixture with wheat under conditions suitable for the production of an all-wheat loaf.

These and other points will doubtless receive the attention of the investigating committee. Its most important task, however, will be to decide, by a thorough sifting of the evidence, the more general question as to whether the war bread is, as a matter of fact, producing any ill effects at all upon the public health. The public will be glad to know that the food controller is in possession of the facts.

Meanwhile, since it is of the utmost importance to the nation that a full supply of bread shall be maintained, while the amount of wheat available is not sufficient for the purpose, we are glad to observe that the medical press is urging the profession to see that the privilege of obtaining high-grade wheat flour for cases supposed to have suffered from the war bread is at any rate not abused.—*Nature.*

SCIENTIFIC BOOKS

The Human Worth of Rigorous Thinking. Essays and Addresses. By CASSIUS J. KEYSER, Ph.D., LL.D., Adrain Professor of Mathematics, Columbia University. The Columbia University Press. 1916. Pp. vi + 314.

Six of the fifteen chapters of this volume appeared in SCIENCE during recent years,[1] while the remaining nine chapters, together with reprints of some of the six which had first appeared in SCIENCE, were published in various other periodicals or by the Columbia University Press. Hence the volume contains nothing new. Its value is due to the convenient form in which these inspiring essays and addresses are here presented. Unfortunately it contains no index and no table of contents besides the chapter or essay headings.

The title of the volume is the same as that of the initial essay, but some of the other essays contained therein could appropriately have appeared under the same heading, while the remaining ones represent somewhat more special developments along the same general line. Hence the title indicates truthfully the subject-matter of the entire collection. The volume might appropriately have appeared also with the following title: Inspiring thoughts relating to the history, bearing and educational value of mathematics with emphasis on the philosophical elements.

The pre-eminent ability of Professor Keyser along the line of presenting the fundamental elements of abstruse subjects in an elegant and popular manner is well known. His style appeals perhaps more strongly to non-mathematicians than to the majority of the mathematicians, who are often so exclusively interested in technical mathematical questions as to be but little concerned with elegance of language and the philosophical question of human worth. Teachers of mathematics should, however, bear in mind that to many of their students technical mathematical questions have little charm, and that some of these students could doubtless be reached by the more subtle but no less real historical and philosophical questions connected with their subjects.

Hence the volume before us can be highly recommended for the prospective teachers of mathematics, as well as for those who are interested in the general cultural values of various scientific subjects. The professional mathematician will, however, also find therein much that is presented from a somewhat new

[1] On page 220 it is stated that Chapter XII., on the "Principia Mathematica," had been printed in Vol. XXV. of SCIENCE. It actually had appeared in Vol. XXXV., 1912, and Vol. XXXVII., 1913.