in their relationship to the rest of human history and endeavor, he is certainly cheated out of one of the most valuable of the endowments which he has a right to demand from that institution. As I have already indicated, scientific method is dominant not only in the study of nature, but in the study of all the social subject-matters, in religion, politics, in all social institutions. Scientific discoveries have made over the answer even to the fundamental question of who is my neighbor. Science is responsible for the view of the universe as a whole which must be the background of our theology as well as our philosophy and much that is finest in our literature. Science has changed sentiment to intelligence in divine charity, and has substituted the virtue of reformation of evil for that of resignation thereto in religion. And yet a large percentage of our students leave the university without having any better opportunity of coming to close quarters with this science than those who are outside the university. They are compelled to get their science from the extension platform, or from the popular magazine. There should be unspecialized science for those who do not specialize in science, because they have the right to demand it of an educational institution.

There is still another demand that should be made upon the science faculties of the university, and that is that they should so organize the courses which their students take, that they will get the unity which every college course ought to give.

That unity of the social sciences which is given in subject-matter and human nature itself, is, as has been pointed out, absent from modern sciences which have become largely what Professor Wundt calls conceptual sciences. The interconnections are not apparent to the students who are in the special groups. Their attention is fixed within too narrow boundaries, the demands of their own subject is so great that they have no time to go beyond. They have a wealth which they can not realize because they can not put it into circulation.

Through the history of science, especially of the other sciences which they do not specialize in, through lecture courses which give them the results of these other sciences they should be able to get the unity of Weltanschauung, which is requisite for any college course.

It is requisite at the end as at the beginning that the student should see his world as a whole, should take up into it what he has acquired, and should get the mutual interpretation which the relation of his subject-matter has to what lies beyond it.

There is certainly no agent that can carry more profound culture than the sciences, but our science curriculum is poor in what may be called culture courses in the sciences, and the import of science for culture has been but slightly recognized and but parsimoniously fostered.

GEORGE H. MEAD.

SCIENTIFIC BOOKS.

An Introduction to Astronomy. By FOREST RAY MOULTON, Ph.D., Assistant Professor of Astronomy in the University of Chicago. New York, The Macmillan Co. 1906. 8vo. Pp. xiii + 557; 201 figures, including 50 photographic illustrations. $1.25.

This book is an elementary, descriptive text, suited to those who are approaching the subject for the first time, and from this point of view the selection of material is quite satisfactory, though not always presented in logical order. At the outset Professor Moulton gives a preliminary outline of the entire subject, followed by chapters which treat in greater detail of the topics usually considered in elementary works, such as systems of coordinates, the constellations, the classes and uses of astronomical instruments, and the leading facts and theories relating to the various bodies composing the solar and sidereal systems.

The book is designed to be readable even by those without extensive mathematical or scientific training; to give a general view of the results that astronomers have obtained in the course of their investigations; and to reveal something of that spirit which inspires scientific work. Astronomers to-day, perhaps more than ever before are endeavoring to solve great problems. The investigations leading to these ends are diverse, extended and many-sided, and the data drawn from the various sources often admit of widely different interpretations. In some departments advance comes from adhering to the hard and fast facts derived from exact measurements, in others from speculative inquiries based upon data that are more or less insecure, founded upon such observations as have been made to the present time. Often contradictory working hypotheses lie so near the limits of indetermination that one is as plausible as the other, and this is so in many of the problems of great human interest as they stand to-day. Hence it is not always easy to decide between rival hypotheses, for the overbalancing data favorable to one to-day may by fresh accessions to knowledge be turned to-morrow in favor of the other. In producing a work on astronomy for the general reader, and for the student as well, some attempt should be made to give that broadening view that the subject affords, not only by reason of its established facts but from the outlook afforded by investigations now in progress. The latter requires the inclusion of outlines of various theories still in formation, to be accepted or rejected according to the evidence that may be adduced in favor of or against them. In his 'Introduction to Astronomy,' Professor Moulton has many references to unsettled questions. He has always considered them with caution, giving briefly the arguments on both sides of debatable points, without commending to the reader one view rather than the other. The chapter on the evolution of the solar system, which may be regarded as the distinctive one of the book, deserves special mention, since it deals largely with the arguments tending to prove the general insufficiency of the Laplacian ring nebular hypothesis, which has so long held a place in elementary texts, and to the exposition of the new spiral nebular theory developed by Professors Chamberlain and Moulton. Even in reference to the latter the author cautions the reader against the too hasty acceptance of it as final, for much still remains to be accomplished in the way of quantitative determinations before this theory can take its place among the accepted results of science.

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Introduction to General Inorganic Chemistry. By Alexander Smith. 8vo, pp. xviii + 780. New York, The Century Co. 1906.

This unusually excellent text-book is intended primarily for beginners in college courses. The author has wisely made the elucidation of chemical theory the main feature of the book, but the descriptive part has been well chosen for the purpose in view. Laboratory experiments are used as the basis of treatment, and the theories are thus explained in a very clear and satisfactory way. The subject is treated from the most modern standpoint, but this has been done without giving undue prominence to the newer theories.

An important feature of the book is found in the numerous references to previous pages, which enable the reader to refresh his memory in regard to matters already discussed. Other points attracting attention are a diagram showing the solubility curves of eighteen important salts, a table showing the actual and molar solubilities at 18° of more than a hundred salts, the use of the single or double arrow in place of the usual sign of equality in chemical equations, the introduction of many suggestive exercises or questions for students, and a serviceable index.

The course here presented is undoubtedly a long and difficult one for the average student, who relies mostly upon memory and possesses little or no power of reasoning; for it comprises practically the whole body of modern chemical theory, which is not grasped easily by the chemically vacant mind. However,