in the text can be made on stiff cardboard, and by their use various subjects can be taught to dull pupils to a much better advantage. Thus they serve a double purpose; the pupil who makes them is benefited, also the class. A few of the many things which can be made are: (a) Block Mountains. (b) Fall Line with Coastal Plain and Plateau. (c) Water Gap. (d) Oxbow Lake. (e) Meandering River. (f) Land-Tied Island, etc.

THREE PAPERS OF MORE THAN ORDINARY INTEREST. A REVIEW.

BY CAROLINE C. HARVEY,

Detroit, Mich.

"The General Efficiency of a Technical Education," by Professor W. C. Mendenhall (SCIENCE, September 4), is an interesting paper discussing the value and efficiency of a technical education as a preparation for life and comparing its general influence with that of the so-called "liberal education." Since these systems have different aims, comparisons must be made on these points: the success with which each prepares a man for new and more exacting conditions and the success with which he fulfills his obligations to society and to himself. To the two educational aims—power and knowledge—Professor Mendenhall adds a third appreciation. The traditional education laid stress upon power and incidentally the third aim was accomplished. By a curious paradox, technical institutions have fallen heirs to the rigid disciplinary methods of the old school masters, so that the efficacy of technical training to accomplish the first aim of education is apparent. It is upon the broad, general side of knowledge and culture that technical training is weak. Three possibilities for improvement are suggested: to devote more time during a technical course to subjects of a general character; to lay the burden of providing this part of education to the preparatory school and by strengthening the student activities and intercourse which make up college life.

"The New Opportunity for Secondary Schools," is the title of an earnest and convincing article by Professor C. M. Woodward

(SCIENCE, August 21), and is a plea for a broader and more practical education than has yet been obtained in secondary schools. One of the most conservative of British educators in a recent address says that a classical education neglects all the powers of some minds and some of the powers of all minds. The great educational problem of the day is to make the high school course of study more efficient and better adapted to the constantly increasing number of students. Gratifying results have followed the building of manual training high schools. The inquisitive and active boy knows that science may be studied and understood with no more effort than it takes to learn the grammar of a dead language. We must cut away from the tradition that culture is only secured from the study of the classics and ancient history, that the skilled hand and cultured mind are necessarily separated.

"The Summer Laboratory as an Instrument for Biological Research," is the subject of an address (SCIENCE, August 28) by Professor Judson Herrick. In substance he says: "Of the three kinds of biological stations those combining research and instruction are of the greatest value. There are two groups of conditions necessary for research, material conditions, and more vitally important, subjective conditions, that is, the culture of the investigator himself.

"History of any special investigation involves four steps: (1) the amount of the investigator's previous experience so far as it affects his mode of thought and fund of ideas; (2) the reception of an impression which directs his attention to some problem; (3) the solution of the problem involving observation and experiment; (4) the unification of the series of facts, so that facts and interpretation fit together. In proportion as the newly acquired facts and their interpretation can be broadly correlated with the existing fund of knowledge, in just so far is the research great. The summer laboratory contributes in many ways to the advancement of science. It gives stimulus and inspiration to many weary investigators by real, vital contact with other men engaged in similar work. Biological stations should be clearing houses for scientific ideas."