south of Franklin from which streams were flowing both north and south. But this col was rapidly reduced by the glacial torrents and thus the present channel was formed. It was during this period that those remarkable deposits in the Conewango and the Allegheny about Warren were formed. At the bottom there is an immense deposit of fine sediment in horizontal laminæ giving place towards the surface, which rises 300 feet or more from the rock bottom, to coarser deposits indicating a southward flow of water.

One of the most interesting discoveries at this point is a nugget of Lake Superior Copper embedded in undisturbed deposits of glacial origin, dropped as Dr. Williams believes by icebergs floating in this temporary lake. Nuggets of copper which Dr. Williams is pretty confident are from the Lake Superior region are also found in glacial deposits of eastern Pennsylvania, brought thither as he believes by icebergs, which in an earlier period passed through the Mohawk Valley before it was completely obstructed by the Champlain-Hudson lobe of ice.

Dr. Williams names his brochure "Pennsylvania Glaciation; First Phase," and gives ample reasons for believing that in the East, at any rate, there is not that immense separation between the earliest and latest phases which geologists in the Mississippi Valley have been accustomed to assume as separating the Kansan from the Wisconsin stages. In Pennsylvania it is certain that such a wide separation can not be maintained; for, though it is true that the glacial deposits over the attenuated border are in general more highly oxidized than those in and north of the moraine, *they are not all highly oxidized.* Mingled with the highly oxidized material of this area there is a small proportion of comparatively fresh material, and it is that which must determine the age. It is evident that the most of the material on the attenuated border was oxidized in preglacial times and was brought forward in that condition by the ice movement. For example, numerous pebbles are found which are oxidized on the outside, while there is a core on the inside that is unoxidized, while in some instances such pebbles have been ground off on one side by the glacial movement, exposing this unoxidized core and leaving the thick covering of oxidization on the other side.

Certainly the scientific public is greatly indebted to Dr. Williams for the pains which he has taken: first, to collect the facts which are found in this brochure, and second for bringing them before the public in such full measure, at his own expense. No glacialist can afford to remain ignorant of the facts and discussion of principles contained in it. The reader will lack only a detailed map of the state of Pennsylvania, which he needs to have constantly before him. The small relief map accompanying the publication is good so far as it goes, but needs to be supplemented for reference by one that gives minute details of topography and geology.

G. FREDERICK WRIGHT

OBERLIN,
May 22, 1917

QUOTATIONS

THE WAR AND SCIENTIFIC INVESTIGATION

THE commendable patriotic ambition of every rightminded American to render his best help in the time of his country's need has raised questions of choice for many citizens. The spirit of service is rife throughout the country, and one's first impulse frequently urges him to enter those avenues of activity that lead nearest to the combat. A sane, calm review of the situation indicates, however, that there are many fields which require profound attention, even though they often seem quite remote from the trenches. The chemist in the munitions works, the bacteriologist who is testing the efficiency of the latest antiseptics, the agriculturist who is striving to solve the immediate difficulties of farm practise or aiding in the "speeding up" of the production of staple crops, live stock and other food products—all of these workers are an indispensable part of the great human organization that must cooperate to lead the way to victory. Frequently many workers, par-

ticularly younger men engaged in important investigations, gain the uncomfortable feeling that they are not doing their full duty when they plod along so far removed from the noise of the conflict. Such persons need encouragement at the present moment. They must not all be permitted to withdraw from the less conspicuous though highly important labor of productive investigation which may anticipate the needs of the hour. The war has already directed attention as never before to the intimate relations between science and industry, as well as to the vital necessity of fostering these relationships. Two generations ago, Dr. Lyon Playfair deplored the holding "to mere experience as the sheet anchor of the country, forgetful that the molds in which it was cast are of antique shape, and ignorant that new currents have swept away the sand which formerly held it fast, so that we are in imminent risk of being drifted ashore." Despite the brief period full of the enormous difficulties of organizing a great military campaign and instituting active defenses as well as naval warfare, substantial headway has already been made in the mobilization of scientific investigation. Researches can not be manufactured on command or completed over night. Nevertheless the National Research Council has already made a commendable beginning in a movement that will enlist some of the best scientific minds of the nation and encourage them to continue the work for which they are specially trained and best equipped. In our enthusiasm for the more apparent helps to success we must not forget these potent silent forces, nor allow the leaders of the nation to overlook the need of supporting and stimulating them. Even war thrives thrugh the fundamental discoveries of science. —The *Journal* of the American Medical Association.

SCIENTIFIC BOOKS

Tomorrow: Letters to a Friend in Germany. By Hugo Münsterberg. D. Appleton & Co. $1.

As soon as Columbia really sets her face toward peace, the war clouds will be dispelled and the age of our hopes will dawn. My mind is gleaming with radiant hopes. Peace must come soon, and who knows, my friend, when the roses bloom again in your beautiful garden, one of the German ships interned here in Boston may have brought me back to the Fatherland to you. I am sure in one wondrous hour at home I can tell you face to face so much more than I have told you in these letters. Yes, when the roses bloom. . . .

The roses will bloom, and perchance peace will come, but the author of these hopeful words has departed, leaving a message which will not soon be forgotten. Professor Münsterberg wrote his last book, well called "Tomorrow," in the form of letters to a friend in Germany. The professor of psychology has given us a study of extraordinary psychological interest; wherein, under a certain appearance of unity, we see the ferment of German and American ideals, and their influence on a scholarly mind. When he came to this country, Münsterberg stipulated that he would remain a German citizen. He did so remain, in a political sense; yet he could not escape Americanization, and his last wish, in the midst of war and of anti-Germanism, is for the union of Germany, England and the United States!

Nevertheless, the German point of view is never forgotten. The ideal is nationalism, combined with a not too insistent internationalism. Science, philosophy, art, must be international; the new nationalism of Germany, which "pleads for a kind of intellectual embargo," is petty and dangerous to real culture; yet "truth must be clothed in its national garb." What is nationalism? It is not the cult of race: "we have heard so often and with so much assurance the story of the omnipotence of race in human history. The true psychologist always knew that it was a legend, and the war has demonstrated it again." Yet, we are told, "in every nation we grasp a oneness of traditions and memories, of language and customs, of laws and literature, of arts and sciences, of commerce and politics, of morals and religion." Do we, indeed? In Switzerland or the British Empire, for example? Is