subdivisions as minute as desired, though in practise an average of one guide per inch will be found to be a generous allowance. Any pamphlet in the series may be found and removed without disturbing others, or the whole group bearing upon a single subject may be located instantly.

It goes without saying that the publications are protected in the most complete manner from dust, light and accidental injury and are at the same time kept perfectly flat and under light pressure.

The total floor space occupied is little if any greater than is required for storage on shelves. The horizontal extent of the case along the wall is less than in other types of storage. The latter point is often of great importance, due to the limited amount of wall space in many offices. Furthermore, the vertical file may be placed in the center of the floor if the room happens to be a large one. The entire cabinet with its contents can be moved from one location to another with no risk of disarranging the collection.

Storage in this manner is not as expensive as is ordinarily supposed. A vertical filing case which I have just received for my own use contains filing space equal to 110 inches of shelving. The cost is about twelve and one half cents per inch, without guides. This is not a transfer case, but a well-made five-drawer upright unit, invoice size. It is steel construction inside with oak exterior. Data are not at hand regarding the cost of filing in pamphlet cases, but shelving with closed dust-proof back if made of selected lumber and well finished would cost probably from seven to ten cents per lineal inch of filing space. If to this be added the cost of pamphlet cases the expense of the method can not be much less than that of vertical filing. The convenience of the latter is such that it would appear advisable to investigate it closely in every case before adopting another system. It offers particular advantages for personal use.

It should be added that the file that I am using accommodates papers with a greatest dimension of ten and one fourth inches. This will provide for most separates, though there are of course a few which are too large. Larger drawers will cost about the same per cubic inch, but correspondingly more per lineal inch.

W. L. EIKENBERRY
SCHOOL OF EDUCATION,
UNIVERSITY OF KANSAS

PHRENOLOGY

IT is gratifying to report the receipt of the following communication, relating to the lecture on "Phrenology" which was referred to in SCIENCE of December 29. The letter is dated January 4, and is signed by Professor Wm. A. Wilbur, dean of Columbian College, George Washington University.

Following your letters of December 21 and December 23, concerning an announced lecture on phrenology before the Enosinian Society, and following a letter of December 26 from Dr. Frank Baker, relating to the same subject, President Stockton directed me to see that the lecture was not given. On December 28 I notified the president of the society of President Stockton's directions in the matter, and I am in receipt from him of a letter of January 3 cancelling all arrangements for the lecture referred to.

President Stockton directed me to say that he felt sure you would wish to give this action of the university as wide publicity as the announcement and note over your signature in the issue of SCIENCE of December 29, 1916.

A. HRDLICKA
U. S. NATIONAL MUSEUM,
WASHINGTON, D. C.

QUOTATIONS

THE TEACHING OF SCIENCE IN GREAT BRITAIN

WHILE discussion is in progress as to the right principles upon which science, now beginning to be recognized as an educational essential, should be introduced into our curricula, it is well to wait until some general synthesis of opinion has been effected before attempting a general summary of conclusions. In practise, we shall arrive at the type of science teaching that commends itself to those who are most closely in contact with present needs and conditions. But it may help to clear the air of controversy if two points of view are restated which are coming into gen-

eral recognition, the one as a result of educational thought before the war, the other in connection with the wide upheaval of opinion that the war has caused.

In December, 1912, we published a draft scheme for the teaching of science upon a synthetic method—the term "synthetic," in this case, implying that science was to be taught as a whole in the more elementary stages, with the rudiments of the separate, specialized sciences blended together and taught in connection with one another as parts of a single realization. The sciences were in danger of becoming the monopoly of specialists; not a mere financial monopoly. but a monopoly of faculty and intelligence. In a civilization increasingly governed by science, it seemed to us of importance that citizens should have a general comprehension of science. More than this: specialists themselves go wrong if they never fully realize the broad foundations of their specialties. A narrow specialist is a bad specialist. The more important specialism in science was destined to become, the more essential we felt it to be that a wide general conception of science should be taught; not only that people might have some conception of the scientific principles upon which they were increasingly governed, but also that the specialists of the future might have a broader foundation for their work through a better realization of the dependence of one branch of science upon the others.

The war has taught us by force what we might not, perhaps, have learned so rapidly by the peaceful exercise of our wits: that in national endeavor all branches of activity must be subordinated to a conception of the whole. The present demand for more science comes of a recognition that, for all our special excellences, our general ignorance of causes had come near to destroying us. And with this recognition there comes a conception of science that goes beyond a synthesis of "the sciences." The scientific outlook, the scientific method, call for a place not only in science teaching, but in all teaching. This is not because we admire German scientific organization. As a matter of pure science, we detest German scientific organization because it is fundamentally unscientific, just as it is fundamentally inhuman. It favors prejudices, not truths. We want to put a right scientific organization in its place; we have seen the results of having no scientific organization at all, though we have battled against these evil results with extraordinarily rapid success.

The war is teaching us a new science of our own and a new humanism of our own. Both are in embryo, as far as education is concerned; much thought and discussion are still needed for the further evolution of a complete system. But one thing becomes increasingly clear. There is no war between our new science and our new humanism. The dying quarrel lies between prejudices rather than between principles. We need a science teaching that is complete and unified; but by now we are coming to realize that we also need a humanistic science, and a humanism that is scientific. Such a solution, if we take the pains to work it out, will be thoroughly in accord with the English genius.—*London Times Educational Supplement.*

SCIENTIFIC BOOKS

Bridge Engineering. By J. A. L. Waddell. John Wiley and Sons, New York, 1916. 2 Vols. 2177 pp.

Like most branches of science or of engineering, the field of structural engineering is abundantly supplied with text-books and treatises. However, as in a vocation there is always room at the top, so in the literature of a subject there is always room for a new work if it presents the subject from a fresh point of view, or if it contributes something new, or puts in a new light something which may be a matter of even common knowledge.

In engineering there is always opportunity for a contribution which will be of value if it embodies results of experience, even upon subjects of which the fundamental principles are well understood, for engineering deals with the applications of science, and, in those applications, conditions are so available that, as is well known, good judgment, common sense and