institutions scattered all over the country, but it is felt that great advantage would accrue from coordination and centralization, and that the founding of such a society is only the just due of the importance of Russian botany "in view of the eminent position which Russia is destined to occupy after the war."

But side by side with these special activities, which are the direct outcome of the quickening of the nation's pulse, there is, as in normal times, a great amount of quiet, unobtrusive research in the domains of biological and physical science. Though there may be no epoch-making discovery to record, there is scarcely a field of mental activity left untilled. Many a peaceful backwater is being navigated undisturbed by the clash of arms, and it is pleasant to read of ethnographical and philological investigations, or of an expedition to the Jablonovy Range to study the local fauna, with its picturesque account of explorations in steppes, morasses and virgin forests. It is interesting to note, in this connection, that there is scarcely a provincial town of any importance in Russia without its medical society and association of local naturalists, or, as the charming Russian idiom has it, "lovers of nature lore," true amateurs in the best sense of the word and all contributing their quota to the common stock. Worthy of mention also are the efforts made for the preservation, as far as may be possible in the circumstances, of valuable treasures of art, science and archeology in the war-zone, such efforts not to be confined to the limits of the empire, but to be extended to enemy territory occupied by Russia. It is pointed out that priceless products of human culture may be saved if timely measures be taken, and to this end the service of various scientific experts has been secured and the sympathetic cooperation of the military staff enlisted.

Finally, mention must be made of the decision of the Imperial Academy of Sciences on the question of the exclusion of alien enemies from the list of honorary members. As the result of a conference held in March of last year to consider the matter the academy expresses itself as loath, by such exclusion, to place any obstacles in the way of the resumption after the war of that international cooperation for the progress of science which will, it foresees, play a greater part than ever in the development of European civilization, "when an end has been made of those hegemonistic strivings which, not content with the sphere of politics, have invaded that of science." Truly a dignified attitude, worthy of an august institution which can look back with just pride on well-nigh two centuries of enlightened effort and solid achievement.—*Nature.*

SCIENTIFIC BOOKS

X-rays and Crystal Structure. By W. H. BRAGG and W. L. BRAGG. G. Bell & Sons, Ltd., London, 1915. Pp. i + vii, 1–228.

All physicists who are at all familiar with the magnificent work which in the two short years between October, 1912, and October, 1914, W. H. and W. L. Bragg did in unfolding the nature of X-rays, revealing the structure of crystals and in laying the foundations for Moseley's brilliant discovery of a relationship between the elements more fundamental than that represented by the periodic table, are agreed that no Nobel prize was ever more justly placed than that which has recently gone to the Braggs. It is the lucid and succinct account of this very new work which constitutes the present book—a book which will always remain a classic, not merely because it is the first book in its field and written by the men who have themselves contributed most largely to the ushering in of the new epoch, but also because it is an unusually fine example of clear, direct and fascinating exposition.

None of the twelve chapters except the fourth, the sixth and the last contain any appreciable material other than that which the authors themselves have contributed. Despite the generous and deserved recognition which they make of the part which Laue played in starting their studies, it is very largely to the Braggs that the world owes the creation of the new subject of X-ray spectrometry, and so long as young men are appearing in England of the caliber of W. L. Bragg and of Moseley, the latter of whom at the age of twenty-seven

had turned out as fine a piece of work as has appeared in fifty years, so long will English physics remain preeminent.

The first chapter reviews briefly the older theories of X-rays and presents Laue's discovery and photographs. The second presents the Bragg theory of the diffraction of X-rays, the third describes in detail the Bragg X-ray spectrometer, the fourth is a brief account of the properties of X-rays. The fifth merely describes crystal structure, little known to most physicists, and the sixth presents our present knowledge of X-ray spectra, and includes an admirable report on Moseley's work. The remaining six chapters present the Bragg analysis of crystal structure made by means of their spectrometer.

Few books have ever appeared which represent in so high a degree the creative work of the authors themselves.

R. A. Millikan
Ryerson Physical Laboratory

An Elementary Manual of Radio-Telegraphy and Radio-Telephony for Students and Operators. By J. A. Fleming, M.A., D.Sc., F.R.S. Third edition. Longmans, Green & Co., 1916. Cloth, 360 pages, 194 illustrations.

This is an excellent elementary text-book on the principles of radio-communication, with enough history inserted parenthetically to add descriptive interest, without sensibly distracting attention from the main line of exposition.

Like all of Dr. Fleming's writings, it is particularly strong on the quantitative side. Nevertheless, the mathematics employed are not difficult.

The book is divided into nine chapters, relating to the following topics: Electric Oscillations, Damped Electric Oscillations, Undamped Electric Oscillations, Electromagnetic Waves, Radiating and Receiving Circuits, Oscillation Detectors, Radio-telegraphic Stations, Radio-telegraphic Measurements, Radio-telephony.

The chapter dealing with radio-telegraphic measurements is particularly good.

A blemish in the didactic method is the use of English units of measure in a few of the examples. The complexity involved in the arithmetic, by reference to such archaic and unscientific units, repels the student more than a transition from English to metric units before attacking the problem, and a final transfer from metric to English units in stating the results.

The book will be of great value to students of radio-telegraphy, and to operators seeking to improve their knowledge of their work on the scientific side.

A. E. Kennelly

The Institutional Care of the Insane in the United States and Canada. By Henry M. Hurd, W. F. Drewry, R. Dewey, C. W. Pilgrim, G. A. Blumer and T. J. W. Burgess. Baltimore, The Johns Hopkins Press, 1916. Pp. 497, 30 pl. Edited by Henry M. Hurd, M.D. $2.50.

This is one of the few works in the English language in which the history of a separate branch of medicine has been exhaustively treated. The editor, Dr. Hurd, prior to his election as superintendent of the Johns Hopkins Hospital in 1889 and after, has had a long practical experience in institutional psychiatry, and there is probably no other authority in this country so well fitted for the difficult task delegated to him and his associates. The four volumes of this work, when completed, will comprise no less than a full set of separate histories of all the insane hospitals in the United States and Canada. The present volume, although it professes to deal only with the general history of institutional care of the insane on this continent, is, in reality, an exhaustive history of American psychiatry in all its phases, and is therefore likely to remain the authoritative work on the subject for an indefinite period. In this history, there are no great outstanding names, like those of Pinel or Tuke or Griesinger, unless it be that of a woman, who was the prime mover of our improved institutional care of the insane. The record is one of collectivism, of the patient labors of societies, journals and individual propagandists for the good of a much-neglected class of human suffering. Matthew