

form certificates of qualification; in General Division 7, lanes for steamers on frequented routes, — (a) with regard to the avoidance of steamer collision; (b) with regard to the safety of fishermen; in General Division 8, night signals for communicating information at sea, — (a) a code to be used in connection with the International Code Signal Book; (b) or a supplementary code of limited scope to convey information of special importance to passing vessels; (c) distress signals; and in General Division 9, warnings of approaching storms, — (a) the transmission of warnings; (b) the uniformity of signals employed.

General Division 10 will cover reporting, marking, and removing dangerous wrecks or obstructions to navigation, — (a) a uniform method of reporting and marking dangerous wrecks and derelicts; (b) the division of the labor, cost, and responsibility among the several maritime nations, either by geographical apportionment or otherwise; or of the removal of dangerous derelicts, and of searching for doubtful dangers with a view of removing them from the charts. General Division 11 will take in notices of dangers to navigation, and notices of changes in lights, buoys and other day and night marks, — (a) a uniform method of taking bearings, of designating them (whether true or magnetic), and of reporting them; (b) a uniform method of reporting, indicating, and exchanging information by the several maritime nations, to include the form of notices to mariners; (c) a uniform method of distributing this information. General Division 12 will be devoted to a uniform system of buoys and beacons, — (a) uniformity in color of buoys; (b) uniformity in numbering of buoys; and General Division 13 to the establishment of a permanent international maritime commission, — (a) the composition of the commission; (b) its powers and authority.

The programme, as above drawn up, is submitted over the signatures of Rear Admiral S. R. Franklin, U.S.N.; Commander W. P. Sampson, U.S.N.; S. T. Kimball, General Superintendent of the Life Saving Service; J. W. Franklin, master marine; J. W. Shackford, master, merchant marine; and W. W. Goodrich, counsellor-at-law.

The Hydrographic Office desires to obtain the opinions and suggestions of interested parties on the various subjects to be considered, with a view to assisting members of the conference in formulating satisfactory rules. It is hoped, therefore, that those whose opinions are likely to have weight on any of the subjects mentioned, may give the benefit of their knowledge or experience.

#### BOOK-REVIEWS.

*Thermodynamics of the Steam Engine and other Heat Engines.*  
By CECIL H. PEABODY. New York, Wiley. 8°. \$5.

THE author of this book is associate professor of steam engineering in the Massachusetts Institute of Technology, and the book is intended mainly for the use of students in that and similar technical institutions. He presents in a clear manner, and with a minimum of mathematical expression, the general theory of thermodynamics; and his treatment of the properties of gases and vapors, and of the injector, presents several novel and interesting features, especially in the comparisons with experiments. More novel still, and more valuable to the student who intends to adopt steam-engineering as a profession, is the author's treatment of the steam engine. He has considered it advisable to leave untouched all approximate theories based upon the assumption of adiabatic changes of steam in the cylinder of the engine, making instead a systematic study of actual tests of engines in use, for which purpose a large number of test records have been collected, arranged, and compared. This will enable the student to learn what is actually known on the subject, and will point out to him the direction in which future investigations will give the best results, as well as show him how and where improvements may be made.

It will be gathered from the foregoing that this book differs, in some parts, either in substance or in manner of presentation, from other text-books on the subject; but in general, commonly accepted methods have been followed. The formal presentation of thermodynamics is the same as that employed by most authorities, and presents clearly the many difficulties of the subject, besides making plain the processes employed.

The author gives special attention to the investigations of the

action of steam in the cylinder of an engine, considerable space being given to the researches made by Hirn, as well as to the experiments which provided the basis for them. Directions and instructions are given for the designing and construction of simple and compound engines, and also for making accurate tests of their efficiency. Chapters are given on air-compressors and refrigerating machines, which important subjects may profitably be studied in connection with the theory of thermodynamics.

Though this volume, like all similar text-books, is largely an adaptation for a special educational purpose of the work of other authors and experimenters, more than a general acknowledgment of indebtedness to them would not under the circumstances be deemed necessary; still Professor Peabody has given references in foot-notes wherever direct quotations have been made, which will aid students materially in making more extended investigations.

#### AMONG THE PUBLISHERS.

D. APPLETON & CO. call attention to the fact that "Christianity and Agnosticism" has gone into a second edition.

— Messrs. Houghton, Mifflin, & Co. announce for early publication, "Literary Landmarks: A Guide to Good Reading for Young People, and Teachers' Assistant." By Mary E. Burt, Teacher of Literature, Cook County Normal School, Englewood, Ill. 152 pages. Cloth, 75 cents.

— The *Modern Science Essayist* for July contains an essay on the "Evolution of Society," by James A. Skelton. In the August number, J. Sidney Sampson discusses the "Evolution of Theology."

"Useful Hints on Steam" is the title of a very attractive little volume of nearly a hundred pages, written and published by E. E. Roberts of 107 Liberty Street, New York. It is written in a popular vein, and is intended for beginners.

— Charles H. Kilborn, Boston, have just ready "Round the World with the Poets," selected and arranged by Mary Cate Smith and Sarah C. Winn, intended to afford a series of review exercises in the study of geography. The quotations are arranged beginning with physical features and then giving longer poems relating to particular countries, mountains, rivers, cities, etc. These are followed by an illustrative tour, giving in selections from well-known authors an interesting journey around the world.

— The September number of *Harper's Magazine* will contain two articles by Theodore Child, one describing the American fine art exhibition at the Paris Exposition, which Mr. Child does not hesitate to say is one of the strongest and most interesting of all the foreign departments, and the other giving features of Moscow life that escape the eye of ordinary travellers. In the same number Edmond de Pressensé gives an outline of the religious movement of the present day in France; "London Mock Parliaments," by John Lillie, illustrated by Harry Furness; the distinguished caricaturist, Caran d'Ache, will have a series of sketches of dogs in the "Editor's Drawer;" and Lynde Palmer contributes a story about electricity called "The Pendragon Trial."

— The next volume in the Badminton Library to be published in the autumn, is "Fencing, Boxing, and Wrestling," written by Messrs. Walter H. Pollock, F. C. Grove, Walter Armstrong, E. B. Mitchell, and M. Prévost. This will be followed later by "Golf," to which Mr. Horace Hutchinson, Mr. A. J. Balfour, and Sir William Simpson (among others) will contribute.

— In the September *Scribner's* Lieut. W. W. Kimball, U.S.N., United States Inspector of Ordnance, will describe the various types of magazine rifles which have been adopted by the leading European armies, including the Mannlicher, Hotchkiss, Lee, Mauser, and Vetterli. A number of illustrations will show the contrivances by which the cartridges are fed to the rifle. Andrew Lang will write of Alexandre Dumas. Harold Frederic will begin a new serial romance of the Mohawk Valley in the days of the French and Indian wars and the Revolution. H. G. Prout's article on "Safety in Railway Travel," is the twelfth and last in the very successful railroad series. It is announced that these articles, with