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Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

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CONTENTS:

TO-DAY QUITE AN IMPORTANT CHANGE takes place in the office of the hydrographer of the Navy Department. Lieut. George L. Dyer, who has occupied that position, vacates the office to perform a tour of duty at sea in conformity to the usage obtaining in our naval service, which, however efficient an officer may have been in the performance of duty, requires that tours of service on shore must alternate with those afloat. During the time that Lieut. Dyer has been associated with the office, both as principal assistant and as hydrographer, numerous changes of great benefit to the naval service have taken place. The establishing of the branch hydrographic offices has proved remarkably successful, and their importance is acknowledged by the maritime community the world over. The issue of the "Pilot Charts" and their supplements was begun, and they have rendered themselves indispensable authorities for all shipping that crosses the Atlantic. The office in Washington has been greatly enlarged, and its facilities for coping with the marvellous increase of work have been greatly improved. The assumption of the collection of meteorological data from the merchant marine, the improvement in the office publications, and the establishment on a permanent basis of the division of marine meteorology, are all matters of the greatest benefit and importance, and bear the impress of the ability of the officer controlling them. The matter of the use of oil at sea and the dissemination of data collected in relation thereto among seafaring people has probably received as much of the personal attention of Lieut. Dyer as any other important feature of his *régime;* and he leaves his office with the satisfaction of knowing that his efforts in the great cause of humanity have been the means of saving hundreds of lives and much property, the value of which can hardly be estimated. We take pleasure in wishing Lieut. Dyer an enjoyable cruise, with the hope that his pouring oil upon the troubled waters for the sake of others may result in his having smooth seas and safe voyages wherever duty may call him.

AS THE DISCUSSION of a possible world's fair somewhere on this continent in 1892 is now going on, a study of the results of the Paris Exposition is in order. Any such exhibition brings to the city in which it is located a great accession of transient population, with a resulting strain upon the resources of that city in its facilities for transporting, housing, and feeding. Every stranger, when he reaches Paris, is recorded by the police; every pound of food and pint of drink that enters the city gates is taxed; the railways make prompt and detailed returns of their business; the theatres make returns; and in various ways the facts that show how a great city is affected by these crowds of strangers are better known in Paris than they could be in any American or English city. Such of these statistics as have been published show that the total number of visitors, or visits, will exceed 24,000,000. The maximum attendance so far was on Sunday, Oct. 13, when 402,000 were recorded. This may, however, be exceeded, as the attendance shows a tendency to increase as the closing day, Nov. 6, draws nearer; the fall in the price of tickets, which has been very great, doubtless having its effect as well. Up to Sept. 30, the attendance recorded at the gates was 19,405,701, and the daily average had been 130,000. The daily averages at previous exhibitions have been, at London, 1851, 40,000; Paris, 1855, 24,000; London, 1862, 34,000; Paris, 1867, 42,000; Vienna, 1873, 40,000; Philadelphia, 1876, 61,000; and Paris, 1878, 70,000: so that the average daily attendance of the exhibition about to close has been nearly double that at the last held in Paris, which was the largest up to that time. The transportation statistics are too imperfect yet to be of much interest, the greater portion of the travel of the railways coming as late as August, for which month the returns are not available. Still we find that in May, June, and July, 10,704,703 persons arrived in Paris in 1889, against 9,647,289 in 1888, an increase of 1,057,414; and in the same period 10,782,766 left, against 9,562,019 in 1888, an increase of 1,220,747. There were, on the average, 25,000 more passengers passed through the principal Paris stations each day during these months than in the corresponding months of 1888. It is estimated that 120,000 Americans flocked to the exhibition. Of the patronage of the hotels it can be said that they received more than twice as many guests in the three months for which we have figures as in 1888. That Paris consumed more food during the exhibition cannot be doubted, but it is strange to have to record a falling-off in the consumption of beef when so many supposed beef-eaters were added to the population. Nor did these visitors show any inclination to feast on horses or donkeys, two items of food which showed only the normal increase of late years. The theatre-owners, and the proprietors of places of amusement in general, feared that the exhibition might prove a damaging rival. The tax returns show just the opposite, being more than double those in the previous year.

ANNUAL REPORT OF THE HYDROGRAPHER.

THE annual report of the hydrographer of the Navy Department contains much of great value to the maritime community, and gives a most comprehensive review of many of the important changes that have taken place in that office during the period that Lieut. Dyer, the outgoing hydrographer, has been connected with it.

The necessity for an earnest co-operation with the Army Signal Service is particularly dwelt upon, and it is clearly shown what

great benefits have already been derived by the community at large from the two services acting in unison. It is further stated in regard to marine meteorology that the navy can now be kept conversant with the latest information touching upon this important subject, the serious study of which had been neglected by the department for many years. One of the reforms of the office has been the establishing on a permanent footing of this division, where the collection and dissemination of data could be carried on without interruption, and where instructions for the service could be prepared and revised in accordance with the progress of the science of meteorology. It is suggested that the Navy Department should establish stations throughout the West Indies, and, in co-operation with the Signal Service, bring the subject of West Indian hurricane warnings to a greater degree of perfection.

The policy of the office in encouraging its employees to improve the character of their work, either by the invention of apparatus or in the preparation of original matter in manuscript, has shown remarkably good results, as have also the efforts made to improve the chart service to ships of war. It is concisely pointed out where improvements can be made in this latter feature, and recommendations are submitted that are well calculated to secure in the near future a still better service. It is also hoped that with the increase in the number of charts, and the augmentation of our foreign commerce, the revenue derived from the increased sale of charts will finally result in making the office self-supporting.

Considerable attention is paid to the subject of the international marine conference, and to the collection by the branch offices of material of value placed before the United States delegates for their consideration; and it is confidently believed that the publicity given to the subject of floating wrecks, fogs, ice, safe routes, and so forth, by the monthly "Pilot Charts" and by the branch offices, has had an important bearing upon the bringing-together of the delegates forming the conference. At the same time full credit is given to Mr. Francis Houghton, superintendent of the Maritime Exchange of New York, to whose active and efficient management is mainly due the passage of the act of Congress creating the conference.

It is suggested that all naval surveying work be under the immediate supervision of the Hydrographic Office, as it is thought that greater economy is possible by such an arrangement, and that the requisite degree of efficiency can only be attained by uniting all the functions of a surveying office with those that the Hydrographic Office possesses at present. A surveying branch being considered a necessary part of the naval establishment, it is thought that special inducements must be held out to officers who are willing to take up this work; and it is hoped that the days for perfunctory service in the Hydrographic Office have departed.

The system of branch offices having proved its great value to the maritime community, its extension is recommended to include every shipping port of importance on our coasts. It is thought by so doing that the Navy Department can maintain itself as the natural leader in all subjects of a hydrographic nature, to which the best interest of the government and the technical education of its officers clearly entitle it.

It is recommended to erect a separate and specially constructed building for the use of the office, the necessity of having commodious and well-lighted rooms for draughtsmen and engravers being obvious. Series of charts for China and the East, a pilot chart for the Pacific, and permanent parties for the determination of the earth's magnetism, together with more extended surveys of those portions of the world in which our trade is active and growing, are all points well worthy of the enacting clause of Congress.

BOOK-REVIEWS.

Hygiene and Public Health. By LOUIS C. PARKES, M.D. Philadelphia, Blakiston. 12°. $2.50.

DR. PARKES comes before us indorsed as the assistant professor of hygiene and public health at University College, London; and he assures us that it is as a result of his experience as a teacher at that institution that he was led to believe that a small book, clearly written, on hygiene, would serve a good purpose. The author has aimed to cover the whole field of sanitary science, and has given such elementary information on every topic as will enable the reader to refer with advantage to the larger text-books.

The necessity under which health-officers often find themselves of dealing with figures and statistics has induced Dr. Parkes to introduce as a closing chapter a discussion of statistics, and how to handle them in so far as they are likely to be of value to those whom he aims to assist. Medical men find trouble in this mathematical part of their work, and will be interested in this novel chapter.

As good drainage is all-important for the preservation of public health, we find Dr. Parkes has devoted considerable space to the methods of disposal of refuse.

The opening chapter is, however, on water. It is one of the longest, and is written with the good judgment displayed throughout the book.

The other chapters are on ventilation, warming and lighting, climate (in which it is possible undue attention is given occasionally to matters which might be assumed as known), soils and building-sites (a chapter likely to interest many), exercise, and contagion. Throughout, the book is written so as to be interesting and intelligible to laymen and doctors alike, and we take pleasure in calling attention to it.

Alternate-Current Machinery. By GISBERT KAPP. New York, Van Nostrand. 24°. 50 cents.

THIS timely little volume had its origin in a paper read before the Institute of Civil Engineers, London, by Mr. Kapp, whose name and reputation as an electrician are well known to all interested in the progress of electrical science. It is reprinted, in convenient pocket form, from the minutes of the proceedings of the society before which it was read, and contains, besides Mr. Kapp's paper, the comments and criticisms made upon it by many eminent electricians, members of the institute, and Mr. Kapp's replies and explanations. The book appears at an opportune moment, as the matter it contains derives additional interest from the fact that the sharp competition at present existing between advocates of the direct-current and those of the alternate-current systems of electric lighting is compelling closer attention to all that is published concerning both systems, or groups of systems.

The subject comprised under the title of the work is divided by the author into six sub-sections: 1. Alternators; 2. Transformers; 3. Motors; 4. Meters; 5. Mains; 6. Accessory apparatus for use in central stations and on the premises of the persons supplied with current from such stations. The question of lamps Mr. Kapp considers as somewhat foreign to the subject under consideration, as glow, or incandescent, lamps are equally suitable to be fed by alternating and direct currents, and arc lamps are adapted to either current by changes easily made. Alternators, transformers, and motors, — the three main points, — of course receive more attention from Mr. Kapp than the subsidiary ones, though no point has been left far in the background.

A Handbook of Descriptive and Practical Astronomy. I. The Sun, Planets, and Comets. By GEORGE F. CHAMBERS. 4th ed. Oxford, Clarendon Press. 8°. $3.

NEARLY thirty years ago Mr. Chambers had ready the first edition of this handbook, which was designed as a handbook that should be attractive to the general reader and of occasional service to the professional astronomer. The author aimed to make a book that should be popular without being vapid, and scientific without being unduly technical. That he was reasonably successful we all know.

A second edition followed in 1861, and a third in 1876. And it should be called to mind that this was the work of an English barrister, who could spare for his hobby, as it were, but a part of his time, mainly absorbed by his professional engagements.

The volume we have before us is the first volume of the fourth edition. The plan at first was to break the work up into two volumes, but the material proved so large in amount that three were finally decided upon; and the author finds himself in a position where he can carry out his original conception of what such a treatise should be.

In this volume we have the descriptive astronomy of the sun,