

SCIENCE:

A WEEKLY NEWSPAPER OF ALL THE ARTS AND SCIENCES.

PUBLISHED BY

N. D. C. HODGES,

47 LAFAYETTE PLACE, NEW YORK.

SUBSCRIPTIONS.—United States and Canada.....\$3.50 a year.
Great Britain and Europe..... 4.50 a year.

Communications will be welcomed from any quarter. Abstracts of scientific papers are solicited, and twenty copies of the issue containing such will be mailed the author on request in advance. Rejected manuscripts will be returned to the authors only when the requisite amount of postage accompanies the manuscript. Whatever is intended for insertion must be authenticated by the name and address of the writer; not necessarily for publication, but as a guaranty of good faith. We do not hold ourselves responsible for any view or opinions expressed in the communications of our correspondents.

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.

VOL. XIV. NEW YORK, NOVEMBER 1, 1889. No. 352

CONTENTS:

THE HALPINE TORPEDO-BOAT..... 291	BOOK-REVIEWS.
AMERICAN PUBLIC HEALTH ASSOCIATION..... 292	Hygiene and Public Health..... 301
ELECTRICAL NEWS.	Alternate-Current Machinery..... 301
A New Ammeter..... 294	A Handbook of Descriptive and Practical Astronomy..... 301
Indicating Temperatures at a Distance..... 295	Chambers's Encyclopædia..... 302
Metal Sheets as Electrical Screens. 295	Hints to Travellers, Scientific and General..... 302
Automatic Electric Balance..... 295	Coal and the Coal Mines..... 302
HEALTH MATTERS.	AMONG THE PUBLISHERS..... 302
Chloroform as an Anæsthetic 295	LETTERS TO THE EDITOR.
Preventable Blindness..... 295	Electric Eccentricities
Suggestive Therapeutics..... 296	<i>Geo. Gibson; The Editor</i> 305
Oxygen Inhalation..... 296	A Lightning Discharge in Quebec
NOTES AND NEWS..... 296	<i>J. C. K. Laflamme</i> 305
EDITORIAL..... 300	INDUSTRIAL NOTES.
The United States Hydrographic Office under Lieut. Dyer. —	The Victor Type-Writer..... 305
World's-Fair Statistics.	Light in Dark Places... 306
ANNUAL REPORT OF THE HYDROGRAPHER..... 300	New Electric Railways... 306
	The Julien Electric Traction Company..... 306

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