so discouraging to its author as that on the ship-building industry, prepared by Henry Hall, who gives us a detailed history of the rise and fall of this business; and its past prosperity vividly contrasts with the hopeless present and not hopeful future. As a history, the report strikes one as rather stale; but perhaps this was unavoidable, although we might have been spared another repetition of the yarn tracing the origin of 'schooner' from 'How she scoons!'[1] It is a pity that the illustrations should be so crude and cheap.

In criticism of the whole report, we regret that more details of designing, methods of construction, discussion of steam-boilers, machinery, etc., were not given. The lines of the Boston and Baltimore clippers will interest naval architects.

In beginning with fishing-vessels, the author puts his best foot foremost; for here we can make a pretty fair showing still, at least as far as vessels and capital employed are concerned. As we have always looked upon the fisheries as the nursery of seamen, we wish statistics of the nationality of the crews of the offshore fishermen might have been given, though probably they would not have been encouraging. The rapid concentration of the fishing interests to a few towns of course diminishes the interest of our coast people in marine pursuits. The tables given show that New England has as large tonnage, and as much invested capital, as all the rest of our ocean and lake coasts combined; and Massachusetts represents three-fourths of the whole New-England interest. Attention is properly called to the desirability of giving fishing-schooners more depth and freeboard.

Chapter ii. is a short history of our merchant marine, and is followed by a chapter on the present state of ship-building at every point along the coast, from Maine to Alaska. Almost everywhere the same story: 'Harrington, once a prosperous village,' or, 'There is no ship-building at present at Ellsworth,' and so on. The causes are several, — discouragement of foreign trade by tariff and extortionate consulate fees, local taxation and pilotage laws, interference of railroads with coasting-trade, failure of suitable timber-supply, and the greater cost of iron vessels here as compared with England. Bath, Me., is the principal ship-building port, and it is interesting to see the result of systematic work; for, while timber is from seventy-five to three hundred per cent higher, it is still possible to build a ship at forty-five dollars per ton, as in 1825. On the Pacific coast wooden ship-building is still a growing industry.

The chapter on iron ship-building offers some hope, in the condition of the more important yards, and the cheapening of the cost of iron vessels. This is fortunate, for the next chapter shows how thoroughly the eastern seaboard has been stripped of ship-timber; and, as well known, second-growth timber is very inferior. The supply of yellow pine, now almost exclusively used for planking, is reported large, but we believe it is growing more difficult to obtain the best quality of this useful wood. The Pacific coast still affords abundance of good ship-timber, and the good character given to yellow fir shows that ship-building on the Pacific need not suffer for years to come. Tables of the specific gravities and weights of the different woods used by ship-builders, by Prof. C. S. Sargent and the late Constructor Pook, U.S.N., are given; and the report is closed with statistics of vessels built in the census year, number of hands employed, wages, value of materials, etc.

[1] The word is probably of Dutch origin, and the rig can be traced back to earlier times than those of Andrew Robinson of Gloucester.

MINOR BOOK NOTICES.

The electric light: its history, production, and applications. By ÉM. ALGLAVE and J. BOULARD. Translated from the French by T. O'CONOR SLOANE, E.M., Ph.D. Edited, with notes and additions, by C. M. LUNGREN, C.E. New York, *Appleton*, 1884. 18+458 p. 8°.

THE fascinating character of the subject, and the great popular interest in it, have stimulated the production of pictorial treatises on electricity and its practical applications. To the specialist many of these modern treatises appear to be uncalled for, or at least seem to be padded with much superfluous and unnecessary matter.

Is there not a curious relation between the expensive furnishing of the offices of many electric-light companies, where the unwary person is induced to invest in stock which has only an imaginary value, and the luxurious editions of many treatises on the electric light? If the office should be embellished, why should not the books that treat of the wares of the company be of *éditions de luxe?*

The work of Alglave and Boulard, edited by Mr. Lungren, contains much extraneous matter; but the general reader will find valuable information in regard to the general features of electric lighting. The treatise does not pretend to be an exhaustive presentation of the subject. One is surprised to find how much interesting matter has been crowded into the

volume, notwithstanding so much space is given to large illustrations. Many of the latter are extremely amusing. One of them (p. 85) represents a street in New York lighted by the Brush electric lamps. On the pavement are many mercurial New-Yorkers, waving their hats; and one is so much overcome with enthusiasm, that he turns his back upon the *fait accompli*, and walks away with bared head. Should not this engraving be entitled 'A street in Paris'?

Report on the International exhibition of electricity, held at Paris, August to November, 1881. By DAVID PORTER HEAP, major corps of engineers, U.S.A. Washington, *Government*, 1884. 287 p. 8°.

IT will be interesting to the visitor to the Philadelphia electrical exposition to compare his recollections of that exhibition with Major Heap's report of the Paris exposition of 1881. He will find in this latter work a short and concise account of the principal types of dynamo-machines, and will discover that the new forms which were exhibited at Philadelphia differ only slightly from those described by Major Heap.

The report does not pretend to contain any measurements or calculations, and was necessarily somewhat hastily prepared. The electrician, however, will find it a valuable addition to his library.

A B C de la photographie moderne. Par W. K. BURTON, C.E. Traduit de l'anglais par G. HUBERSON. Paris, *Gauthier-Villars*, 1884. 112 p. 12°.

As its name implies, this work is intended for the beginner in photography, but it contains many hints that those of longer experience might profit by. Beginning with the choice of apparatus, and the arrangement of the dark room, the whole process of photography is described, including both methods of development, to the production of the finished print. The most prominent defect of the work is that the chapters on printing are rather too brief: indeed, there is no description at all of the processes of mounting and burnishing. The chapters on the production of the negative, however, are excellent, as is the one on defects and their remedies.

NOTES AND NEWS.

PROFESSOR Mell, director of the Alabama weather-service, announces, that through the liberality of the chief signal-officer, and of several railways, daily weather-signals, predicting changes of weather and temperature, will be displayed at over one hundred telegraph-stations in that state. The predictions will be received by the director at an early hour every morning from the signal-office in Washington, and then promptly distributed along the railways. By paying for the cost of the signal-flags (about six dollars), any town or telegraph-station will receive free telegraphic warning of the daily weather-changes. Only about five minutes is required to set the flags. A similar system has been for some time in operation in Ohio and in part of Pennsylvania, and it will doubtless have farther extension.

— Herr Warburg has succeeded in electrolyzing glass by heating a piece of soda-lime glass to about 300° C., at which temperature it is a conductor, and placing it between mercury electrodes. It was necessary to use from fifteen to thirty Bunsen cells for a long period. He then found, that, at the anode side of the glass, he had a layer of silicic acid. This layer very quickly reduces the strength of the current, owing to its bad conductivity.

— We learn from *Nature* that a tunnel measuring about five thousand feet in length, and constructed at least nine centuries before the Christian era, has just been discovered by the governor of the Island of Samos. Herodotus mentions this tunnel, which served for providing the old seaport with drinking-water. It is completely preserved, and contains water-tubes of about twenty-five centimetres in diameter, each one provided with a lateral aperture for cleansing-purposes. The tunnel is not quite straight, but bent in the middle: this is hardly to be wondered at, as the ancient engineers did not possess measuring-instruments of such precision as those constructed nowadays.

— Heddebault has succeeded in separating rags of cotton and wool, mixed, by subjecting them to the action of a jet of superheated steam. Under a pressure of five atmospheres, the wool melts, and sinks to the bottom of the receptacle; while cotton, linen, and other vegetable fibres stand, thus remaining suitable for the paper-manufacture. The liquid mud which contains the wool thus precipitated is then desiccated. The residue, which has received the name of azotine, is completely soluble in water, and is valuable on account of its nitrogen. Moreover, its preparation costs nothing; because the increased value of the pulp, free from wool, is sufficient to cover the cost of the process.

— A Berlin correspondent of the *St. James gazette* writes that an engineer named Fisher is reported to have made an important discovery in aeronautics, by which he is enabled to condense or expand the gas in a balloon. The agent he employs is compressed carbonic acid, with the help of which he can ascend or descend at pleasure. This perpendicular movement puts it in the power of the aeronaut to go up or down until he finds a current of air moving in the horizontal direction he wishes. Military critics attribute great importance to this discovery, because in time of