there is occasionally a lapse in this respect; and his statements are manifestly made only after much study and preparation, for it is seldom that there is any reason for criticism on the ground of inaccuracy. It is hardly to be expected that any general text book shall be free from slips of one kind or another, and the agents of rival publishing-houses will always have their opportunity of picking up little flaws and magnifying them before school superintendents. We do not intend to aid these agents by mentioning any little errors here discovered; but it is allowable to wonder why this and all other text-books fail to explain difference of latitude as the angle between the horizons at two places on a meridian, why they always fail in explaining the low atmospheric pressure around the poles, why they speak of mountains and valleys as the "eventual" forms to which erosion will reduce the land.

The publishers call particular attention to the revision of the chapter on the atmosphere; and it certainly deserves commendation. A very rational understanding of the phenomena on which climate and weather depend may be gained from it; and this is much more than could be said of the older books. The chief omission here is one that prevails through the whole book,— the absence of any indication or suggestion that the scholar can find out many of these things for himself. A physical geography in which this idea was the main theme would be welcomed by many teachers.

The Life of John Ericsson. By WILLIAM CONANT CHURCH. Vols. I. and II. New York, Scribner. 8°. $6.

THE author has presented this work on the life of the great inventor in a clear, readable manner, and has shown excellent judgment and a remarkable insight into the character and scientific attainments of John Ericsson.

There is one fact that must impress itself upon those who read these volumes; and that is, that in the life's work of the man one can trace step by step the development of the steam-engine, almost from its very beginning, to these days when its power is felt all over the world. Even the matter of forced draught, which is one of the vexed questions of the day, we find was considered in his early plans for steam-machinery. Naval construction and naval warfare were revolutionized by the introduction of the screw propeller, which the author shows beyond question to have been due to the genius of Ericsson, from whose engines, introduced almost half a century ago, have gradually grown the magnificent machinery which moves immense hulls about the ocean at a rate of speed that fully bears out prognostications made years before others could realize that they were any thing more than the dreams of an enthusiast. Of all Ericsson's inventions, the one most closely connected with his memory in the minds of Americans will always be the "Monitor." The idea of this war-vessel appealed at once to the minds of the naval authorities, whose prompt and spirited action was followed by a great display of energy on the part of the builders; so that, "while the clerks of the department were engaged in drawing up the formal contract, the iron which now forms the keel-plate of the 'Monitor' was drawn through the rolling-mill." It has been estimated that the new vessel contained at least forty patentable contrivances; and Ericsson was again and again urged to secure patents for these, but, without avail. "He was strangely neglectful all through life of this means of protecting his property rights. Numerous as were his patents, they by no means represented the full measure of his ingenuity, and many of them were taken out to secure for himself, as well as for others, the right to use his own inventions." It was Ericsson's habit to wait until he was ready to present his engineering conceptions in practical form before announcing them. Thus they had opportunity to ripen in his mind, and to gain in clearness and completeness with growing experience. The conception of the "Monitor" as part of his mental history was nearly half a century old when it was put into execution to meet the exigencies of war.

In demonstrating the efficiency of his method of under-water torpedo attack, he said, "My only object is that of seeing the sea declared by all nations as sacred neutral ground. It is the highway of mankind." He also declared the art of war to be in its infancy. "When perfected, man will be forced to live in peace with man. This glorious result, which has been the cherished dream of my life, will unquestionably be attained before the close of the present century."

Aside from his contributions to the practical part of warfare, which, collateral and incidental, were many, and are to-day showing how far from being visionary and impracticable he was, Ericsson went deeply into the scientific questions bearing upon radiant energy, thermo-dynamics, light, and heat. His various devices for a caloric engine occupied a great deal of his attention throughout his professional career, and its development was naturally associated with inquiries as to the nature of solar energy, and the possibility of its direct application to the purposes of human industry. He resolved, as he said, to measure for himself "the intensity of that big fire which is hot enough to work engines at a distance of 90,000,000 miles." Toward the close of his life, in writing to a friend, he says, "The sun-motor is nearer perfection than the steam-engine; but until the coal-mines are exhausted its value will not be fully acknowledged." As the present study of solar physics dates from only thirty years ago, Ericsson is one of the pioneers in this field so fruitful in its promise of great revelations, and "he is certain to be remembered as one who did much to stimulate and direct inquiry in this most important field of physical research."

Of his friendships his biographer says, "He was as true to his friends as he was charitable and forgiving toward those who had done him injustice or positive wrong. He was full of kindly feeling, and was always ready to stretch forth his hand to those in need of his service." He was utterly unostentatious in his many charities; and what he did was done with his whole heart, and he added to the gift the grace of cheerful giving. Col. Church thinks that "whatever the final determination as to the correctness of some of Ericsson's conclusions, it cannot be questioned that he has made very important contributions to science." The work is an undoubted addition to literature, is rendered attractive by numerous and well selected illustrations, and contains an index of great completeness.

AMONG THE PUBLISHERS.

LAST spring appeared a little volume entitled "An Appeal to Pharaoh: a Radical Solution of the Negro Problem." The steadily growing demand has determined the publishers (Fords, Howard, & Hulbert of New York) to issue an edition in paper covers, and to announce the name of the author, who is Mr. Carlyle McKinley, an editorial writer on the *Charleston* (S.C.) *News and Courier*.

—Mr. Daniel Greenleaf Thompson has written an elaborate essay on "The Philosophy of Fiction in Literature," in which the principles of the novelist's art are examined in detail, while especial attention is paid to the consideration of the moral aspects of the novel, and of its influence for good or evil. The book will be published shortly by Longmans, Green, & Co.

— The Pacific district comprises California, Oregon, Washington, and Nevada; but in "Land Birds of the Pacific District," by Lyman Belding (San Francisco, California Academy of Sciences), the district of British Columbia, and the notes of the lighthouse-keepers on the coast of British Columbia and Washington, are included. "This report aims mainly to show the arrivals and departures of migrating species, as well as to give a catalogue of all the species known to occur in the district." The number of species recorded is 295. It is an important contribution to the geographical distribution of the land-birds of the Pacific coast.

— The fourth volume of "The Century Dictionary" has just been issued, containing the letters *M* to *P* inclusive, and forming a quarto of 1,323 pages, illustrated by nearly 1,500 cuts. The first volume was issued in October, 1889; the fourth has followed in November, 1890 (almost within a year); and the other two volumes, completing the work, will be published during 1891,— the first early in the year, and the second probably by summer. The present volume is the largest of the series yet published. With