radiation through the clear, dry air above. It is not at first apparent why the ground should cool to an excessively low temperature, while the air above it remains comparatively warm: it is because solids can cool by radiation, just as they can warm by absorption, much more quickly than gases. For this reason, the upper air changes its temperature but little from day to night; while the ground, and to a certain extent the air near it, have a large diurnal range. Now, during an anticyclone, radiation from the ground is rapid through the clear, dry air; thus the temperature falls very low, and the air on or near the earth's surface is greatly cooled. If the descent of the air were rapid, radiation would not have time to overcome the warmth gained by compression; and it is known, that, when the surface wind springs up in an anticyclonic centre, the temperature rises with it. But generally the descent is slow; and, when near the ground, the down-current turns aside as a slow horizontal outflow; it becomes heavy as it is chilled, and tends to collect and stagnate in depressions. Ground fogs form when the dew-point is reached, and then the contrast is complete between the clear, pleasant weather on the peaks, and the cold, damp air in the valleys. In the first and second types the temperature is chiefly imported; in the third it is essentially of local origin over the mountains. December, 1879, gave a famous example of an inversion on a large scale in Europe, and much was written about it. An enterprising mountain-climber ascended a peak in the Alps east of Lake Geneva on Christmas day, and was rewarded by rising above the dense clouds that covered the lake and filled the cold valleys, and finding fine, clear, relatively warm weather on the mountain-top. A few examples of such inversions must make our observers wish they were in a region of permanent high pressure, instead of in one of the stormiest countries of the world. W. M. D.

JAPANESE HOUSES.

THE opening of the empire of Japan to foreign intercourse has furnished more subjects of inquiry to the student of human development than any event of recent times. Here is a nation which has been secluded for centuries from all except the most insignificant external influences. During this seclusion, modern European civilization, with its science and arts, its comforts and refinements, has virtually come into existence. In the mean time, the secluded nation, mainly without help or hindrance from its neighbors, has been engaged in working out the problem of its national life in its own way. Suddenly the curtain is raised, and we are permitted to look in upon the spectacle so long in preparation. For a quarter of a century we have been studying the scenes thus revealed to us, and have not yet fully succeeded in making out their meaning.

That the Japanese race is one possessed of native vigor and resources is shown by the outcome of this long experiment of isolation. With all the disadvantages arising from the want of free foreign intercourse, they have made such progress in the arts of civilization as to challenge our admiration. In intellectual activity, in warlike and chivalric achievement, in gentle and amiable manners, in the refinements and amenities of life, they may certainly bear favorable comparison with the most cultured races. They present to us a strange mixture of excellences and defects. While as a nation they are conspicuously brave and warlike, they have devised and developed few formidable implements of war. They have built great cities, and conduct a vast system of trade; and yet their ships and warehouses, and public and private buildings, seem, by the side of ours, fragile and temporary. They manufacture the most exquisite and tasteful fabrics and wares, and yet the mechanical appliances of their arts are rudimentary.

We are thankful to any one who will help us to gain some insight into the character and life of such an interesting people. It was a most happy thought of Professor Morse to make a careful study of the Japanese house. Nothing can aid us more in understanding the life of the occupant than to describe his dwelling-place and the implements and furniture which he gathers into it. Fortunately for us, the author of this book combined in himself the faculty of the scientific observer and the skill of the artist. We may safely say that here, for the first time, we have intelligible sketches of the Japanese dwelling-house, and intelligible explanations of the uses and arrangement of its furniture. Heretofore we have had chiefly photographs of exteriors and gateways and street scenes, or, instead of that, we have been treated to reproductions of native Japanese drawings by engravers who did not understand the drawings. It is the experience of every stranger visiting this country, that, notwithstanding all that he has tried to learn from books about Japan, he is as much amazed at the real Japanese house and surroundings as if he had never seen an illustration of them. Professor Morse, on the contrary, has gone about with eyes in his head and a pencil in his hand. The minuteness and

Japanese homes and their surroundings. By EDWARD S. MORSE, with illustrations by the author. Boston, *Ticknor*, 1886 [1885]. 8°.

accuracy of his information surprise us at every page. It must be confessed that it required a good degree of enterprise and assurance to have secured some of his sketches. The Japanese are a most amiable and polite people; but they must have been amazed, and perhaps amused, at the persistency with which the artist went about peering behind their screens, under their mats, and into their closets. We, however, have no reason to complain; for he has seen for us far more than we could have seen for ourselves, and has brought to us such a budget of facts, and such a portfolio of illustrations, as we could not have gathered for ourselves in a lifetime.

In any country a dwelling-house is the product of complicated causes. Climate, the prevalence of destructive agencies, the character of the material available, the skill of the mechanics, the wealth of the people, the growth of artificial physical wants, the development of a taste for the beautiful and refined in life, — all these are potential causes in determining the character of the dwelling. These causes account for most of the peculiarities of the Japanese house, as compared with our own. From time immemorial, Japan has been visited by earthquakes and typhoons. These will explain why the Japanese builds his house as low as possible, and prefers wood to stone. The climate is mild, and does not demand the formidable provision against the cold with which we are familiar. This may account for the absence of chimneys and stoves. It puzzles us, however, to understand why the Japanese, who has shown such cleverness in the development of many of the arts of civilized life, has made so little progress in others. In 1542 the Portuguese landed on the southern islands of Japan, and left there, among other traces of their visit, a number of the matchlock guns which were in common use in Europe at that time. After the lapse of more than three hundred years, you can see the hunter of to-day out on the hills with a gun which is of the identical pattern which the Portuguese brought thither. The Japanese gunsmith has found out how to make the matchlock a far more ornamental weapon than it was in the hands of the Portuguese. He has decorated the stock, and inlaid the barrel with gold and silver, and provided it with exquisite fittings; but still it is the same old matchlock, without a single effective part changed or improved. Such absence of progress is surprising; but it does not surprise us half so much as their marked superiority in other and more difficult arts. In the modelling and decoration of pottery; in ornamental metal-work; in weaving and embroidery; in painting, carving, and enamelling; in the exquisite workmanship of their lacquer wares, — their achievements put them in the very first rank.

In all these departments of industry the Japanese now have an acknowledged position. It has not been so well known that in many of the humbler departments their work is scarcely less to be admired. Professor Morse has given us, in this volume, sufficient evidence of the excellence of their carpentry and joinery, of their skill in gardening, and of their cleverness in making both house and garden contribute not only to the physical comfort, but to the intellectual pleasure of the occupants. We are specially indebted to the author for exhibiting to us so clearly the internal arrangements of a Japanese dwelling-house, and the domestic routine which goes on in it, and the evidences of comfort and refinement which are everywhere seen. The beautiful products of their ornamental arts have become familiar to us, and are almost as much at home in our houses as in theirs. But the implements of common life are still strange to us; and we are thankful to Professor Morse, who, in this book, has given us so much information about them. I need only mention such illustrations as those of a carpenter's tools, of a thatched roof, of the interiors of dwelling-houses, of a kitchen range, of their bath-tubs and lavatories, of their candlesticks and lamps, of their wells and water-buckets, of their gardens and garden-lamps, to show how varied and interesting are the contents. We are sure that Professor Morse's portfolio is not yet exhausted; and it only remains for us to express the wish that in due time he may open for us another instalment of his delightful wares.

PHYSICAL EXPRESSION.

IN the term 'physical expression,' Dr. Warner includes all those changes of form and feature occurring in the body which may be interpreted as evidences of mental action. Such changes are taking place constantly, and in response to all kinds of mental impressions. The majority of them are involuntary, and, so far, trustworthy, it being the height of art to simulate a feeling successfully. At first thought, it would seem that facial expression is the most important of these outward signs of inner processes; but a little observation will convince one that the posture assumed by the body, — the poise of the head and the position of the hands, — as well as the many alternations of color and of general nutrition, are just as striking evidences of the course of thought. And such changes may be permanent as well as

Physical expression: its modes and principles. By FRANCIS WARNER, M.D. (International scientific series.) New York, *Appleton*, 1885. 12°.