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The young man's book of amusement

Halifax, 1848

Beautiful Figures in Sand, &c. produced by Sound

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Beautiful Figures in Sand, &c. produced by Sound.

It has long been known that the agitations produced in the air by a sounding body may be sufficient to excite a second body placed even at a great distance from the first, provided, however, that both be capable of producing exactly the same number of vibrations in the same time.

Dr. Savarb has been making experiments with stretched membranes, which at the same time that the thickness are very inconsiderable, present large surfaces to the air, which puts them in motion. He took, for example, a circular piece of thin paper, or gold-beaters' skin, about ten inches in diameter, and carefully stretched it by its circumference upon the edge of a large glass vase; on strewing the surface, placed horizontally, with fine and dry sand, and bringing a plate of glass in vibration within the distance of nine or ten inches, and parallel with the surface, the membrane entered into motion, and the sand assumed figures, which were sometimes perfectly regular, and which often formed themselves with so much rapidity, that his eye had scarcely time to perceive the circumstances which accompanied the transformation of the light layer of sand into a greater or less number of quiescent lines. Various figures were thus obtained—stars with four, six, ten, or more radiations, circles, &c. When the plate instead of being parallel, was placed perpendicularly to one of the diameters of the surface, the sand formed itself into a system of quiescent lines, which ge-

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nerally were parallel with one another: one of these lines passed always through the centre of the membrane, and was contained in the plane which passed through the face of the plate; the direction of the motion consequently continually changed with the direction of the vibrating plate. If instead of holding the plate in the direction of perpendicular to that of the surface, it was inclined; at every degree of inclination the phenomena obtained were different, and the lines traced by the sand continually modified themselves differently, although the number of vibrations remained the same.*

Acoustical Alphabet.

By varying the order of arrangement, the whole alphabet may readily be rung on three bells; and these being formed into sentences by short pauses between each word, will fully serve for distant conversation. For musical instruments, it is merely changing keys for bells, and the same purpose may

* The tones of the flute, trumpet, musical glasses, &c. or of the voice, produced the same results as a vibrating plate. When the tones were successively varied, for example, when a very slow air was performed on the flute, at about nine or ten inches distance from the membrane, the sand was agitated, and traced lines, the combinations of which incessantly varied with the sound produced.—Stringed instruments were not so well calculated to produce these effects. These experiments were varied in a number of ways, by employing membranes, of which the dimensions, nature, and tension, as well as form, were different: they always, however, presented analogous results.