

nature than mere juxtaposition), constitute a distinct compound vibrating system, in which parts differently elastic are intimately united and made to influence each other's motions. Of such systems in acoustics we have no want of examples—in membranes stretched on rigid frames, in cavities stuffed with fibrous or pulverulent substances, in mixed gases, or in systems of elastic laminæ, such as boards, sheets of glass, reeds, tuning forks, &c., each having a distinct pitch of its own, and all connected by some common bond of union. In all such systems the whole will be maintained in forced vibration so long as the exciting cause continues in action, but the several constituents, regarded separately, will assume, under that influence, widely different amplitudes of oscillation, those assuming the greatest whose pitch taken singly is nearest to coincidence with that of the exciting vibrations. Everybody is familiar with the tremor which some particular board in a floor will assume at the sound of some particular note of an organ; but when that note is not sounded, it is sufficiently apparent that the board is no less occupied in performing its dynamical office of transmitting to the soil below, or dispersing through its own substance and the contiguous bodies, the motion which the oscillation of the air above is continually imparting to it.

(17.) As we know nothing of the actual forms and intimate nature of the gross molecules of material bodies, it is open to us to assume the existence, in one and the same medium, of any variety of them which may suit the explanation of phænomena. There is no necessity