

ity begins to act. Affinity will frequently operate when a liquid and a solid are brought into contact ; but, to ensure the action, the cohesion should be decreased as much as possible. When both substances are liquefied, this is accomplished ; for, however slight the chymical attraction may be between two particles, it will be sufficient to produce the combination ; from which it may be supposed that the cohesion of particles is entirely destroyed when they are liquefied. Mechanical division and increase of temperature assist in producing a state more suited for combination, but cohesion exists still ; and all these processes can do is, to diminish the energy of that force, and present a larger surface for the activity of chymical attraction.

From these statements, it might be supposed that elastic fluids would readily unite when placed in communication with each other, the cohesion being in this instance entirely destroyed ; but, on the contrary, there are few gases that will do so, and this may be attributed to the great repulsive power which surrounds the particles of matter in this state, preventing them from coming within the sphere of chymical attraction. Elasticity may, however, and frequently does, act as a decomposing agent, and nothing is more common than the separation of two substances feebly combined, when the compound is compelled to take a gaseous form.

There are other circumstances which have a tendency to prevent the chymical force from operating upon the particles of matter ; but, supposing these to be removed, there is an election or choice displayed by particles of one kind of matter for those of another, and, when united together, a third substance is formed, distinct in character and properties from either of its constituents.

The most simple instance of chymical affinity is where two substances mix together, as when sugar dissolves in water. There are substances which will thus unite, and there are others which cannot be combined ; oil will not combine with water ; for, however intimately they may be mixed, they will separate as soon as the mechanical force by which they were united ceases. Between these extremes, there may be a great variety of degree in the power of combination evinced by bodies, being in some instances extremely active, and in others as weak.

But affinity is sometimes exercised under a more complex