

seem to be in solid contact, the two pieces have lost all attraction for each other. The attraction of cohesion, then, exists between the molecules of matter, and, unlike gravitation, it acts only through an extremely short space.

A moment's reflection would show us how extremely inconvenient it would be if it were otherwise. On the other hand, it would be just as inconvenient if gravitation did not act through very long distances, as we find it does. If, for instance, it were like cohesion, there would be nothing whatever to hold us down to the earth as soon as we had raised our feet from it. What the boys call a "broad jump" would become a very "high jump."

There is another force, called Chemical Affinity, which is very much like cohesion in that it acts through very short distances, but its attraction is not between the molecules of a substance, but between the atoms of which the molecules are made up. The study of the laws that govern this force is one to which the chemist must especially address himself.

For the purposes of our subject we may treat the attraction of cohesion and the attraction of chemical affinity the same as we do the attraction of gravitation. It requires energy just as truly to overcome these attractions as it does to overcome the attraction that