

tions in the table. When it is considered that the approximate values of the distances r between the indicated atoms (see figure 5) are known, as well as the values of D and $(D \pm H)$ (see page 58 , Electrons, Atoms, Molecules), the only unknown quantities in the equations are the m 's ; so these distances within the atoms themselves may be found when the forces are equated to zero for the equilibrium condition.

The All-nuclear Atom Causes Each of the Noble Gases To Be Monatomic

The helium atom is shown by diagram in figure 1A. It consists of one alpha particle to which two neutralizing electrons are attached. They are not in contact with the electrons of the alpha particles, but they must be located upon its axis because the force upon them acts in a direction perpendicular to the equatorial plane.

In that situation the distance to the center of one of these electrons from the equator of the atom must be more than three of the radii of a negative electron. Otherwise this electron would press against one of the electrons of the alpha particle. Since electrons repel each other there probably intervenes a space between them. The minimum distance, therefore, that one of these outside electrons can come to the equator of the atom is $5.58 \cdot 10^{-13}$ cm., and it is no doubt more than that.

The distance that one of these neutralizing electrons must be from the equator of the atom in order to unite with one hydrogen atom to form a molecule He-H, has been calculated to be $1.4 \cdot 10^{-13}$ cm. These electrons cannot be located nearer the equator than $5.58 \cdot 10^{-13}$ cm. as stated. Therefore no molecule can be formed with hydrogen.

The example cited is that of the He-H combination, but it may be shown that helium will not

