velocity as the swift hydrogen atoms obtained by the collisions of α particles with hydrogen as shown by measurements of e/m for swift atoms from the three sources: hydrogen, nitrogen, and the source or hydrogen occluded in the materials used. Furthermore, nitrogen, when bombarded by α particles, appears to be the source of hydrogen atoms. The number thus obtained is, however, comparatively small.

Rutherford has given evidence of three possibilities.

1. Radium C may radiate H atoms as well as α and β rays.
2. The law of inverse squares probably holds at distances smaller than the diameter of the electron.
3. Nitrogen may be disintegrated by α particles giving hydrogen as a product.

ILLUSTRATION OF MOLECULAR MOTION.

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A proper appreciation by secondary school students of the "habits of Nature," which are expressed in abstract statements called "laws" because of their unfailing truth, is more readily brought about if concrete examples are given to illustrate their application.

For instance, it is very difficult for an immature mind to appreciate the modern theory of the composition of matter. When it is said that matter is not continuous but is of its own nature discrete, i. e., composed of unit particles known as molecules, it is difficult for the student to grasp the full meaning of this abstract statement. His idea regarding the behavior of these molecules is also a vague one. It is very hard for him to visualize the movements of particles infinitely small, contained in a transparent vessel, and themselves invisible. If he can perform an experiment which will illustrate to him how molecules move very rapidly in straight lines until they collide with each other or come into contact with the walls of the containing vessel, then he will be able to perceive that molecules are elastic. He will also be able to accept the postulate that the interstices between the molecules must of necessity be larger than the molecules themselves. Furthermore, if a student is enabled, through an appropriate illustration, to understand that when heat is applied to the system the molecules move much more rapidly, then he will be in a much better position to take up the

study of the gas laws. He will also be enabled to understand more thoroughly the kinetic theory of gases which is based upon all of these considerations.

A device illustrating the assumed behavior of molecules, and described by E. R. Stoekel in "Science," Vol. XLVIII, No. 1245, has been employed by the writer in assisting chemistry students to a better understanding of the molecular theory. It consists essentially of a hard glass tube about ten inches in length and one inch in diameter containing a pool of mercury which supports a small quantity of finely crushed material. In using this form of apparatus in the Association School laboratory it has been found that particles of cobalt glass of about twenty mesh are very satisfactory. After preparing the tube, as here indicated, it is evacuated so that a pressure of less than a millimeter obtains and is then sealed from the pump. During the subsequent demonstration the tube may be held in the hand without inconvenience but may, if desired, be clamped to a standard.

Upon the application of heat to the mercury pool and upon gradually increasing the temperature, the particles on the surface "were carried away by the evaporating mercury" and moved about in the upper part of the tube in much the same manner as gas molecules are presumed to behave.

After completion of the demonstration by the instructor each student may be allowed to verify the experiment. The use of this simple device excellently enables the student to form a clear mental picture of how the very small gas molecules are supposed to be in constant motion and how the speed of this motion is altered by changes in temperature.

POTASH DEPOSITS IN SPAIN.

Potash deposits were discovered a few years ago in the Province of Barcelona, Spain, near the villages of Suria and Cardona. They consist of irregular beds of carnallite and sylvinite interbedded with rock salt. Explorations to a depth of several hundred feet show that in the Suria district potash beds occupy an area of not less than 75 acres and occur at depths from 125 to 200 feet. The average combined thickness of the carnallite beds is estimated to be about 56 feet, and of the sylvinite about 13 feet. The Cardona upper beds are interbedded with gypsum and clay, but the lower beds contain nearly pure white salt, which is that principally mined. After the discovery of potash at Suria, these Cardona beds were searched for potash, and nearly pure sylvite was found. Estimates for the area prospected place the quantity of carnallite at 2,550,000 tons and of sylvinite at 1,150,000 tons.—[*U. S. Geological Survey*.