

of oxygen. When a steel spring attached to a lighted match is dipped into the liquid the hard steel burns explosively, like a fuse, and with a great effusion of sparks so that the chilly cup glows like a bright lamp. Examination of the cup after this experiment will reveal that the steel has been really fused in this frigid atmosphere because covering the bottom will be found beads and pellets of steel from the spring.

Air when liquefied contains not only the nitrogen and the oxygen of the air, but also the other gases. By this means helium, the latest discovered element, can be secured when present to the amount of four parts in ten thousand. The carbon dioxide of the air becomes solid and appears as a precipitate in the liquid which can be easily filtered off, and thus liquid air proves to be an important analytic method.

The color of liquid air is pale blue such as can be seen in the sky on a clear day. Nitrogen boils at  $-193^{\circ}$  C., oxygen at  $-180^{\circ}$  C.; thus nitrogen will evaporate before oxygen. By thus allowing nitrogen to evaporate nearly pure liquid oxygen can be obtained. Nitrogen is a colorless liquid and as it slowly disappears from liquid air the remaining liquid becomes a deeper blue.

Now then of what use is liquid air and what can be expected of it? I might say that it has already found a commercial application for the purpose of obtaining pure atmospheric oxygen by the method just mentioned—and its possibilities are far greater than we ever imagine at first thought.

Refrigeration is likely to be the first purpose for which it will be used to any great extent. By its use fresh meats and vegetables will stand shipment to great distances. The coming refrigerator for our homes will require less than a pint of the fluid a week, to freeze four quarts of cream will require less than a thimble full and it will be accomplished with the least imaginable amount of work.

For hospital purposes it will be indispensable, especially in warm climates for the treatment of yellow fever. The temperature of wards can be regulated to any temperature desired, it can be kept constant, and regulated to a nicety.

For use as an explosive, experiments which have proven most satisfactory have been made on the continent. The force generated compares favorably to that of nitro-glycerine and although the liquid air must be made on the spot, because of failure to