Evolution of Gas.

Parr and Wheeler have shown that a combustible gas is given off by coal immediately upon mining; they sealed coal up in air-tight jars, and found that after ten months the vessels were filled with a combustible gas under pressure.

Taffanel states that it is during the first ten days after mining that the greater part of the available methane is set free; he obtained a liberation of 14—22 c.c. per grm. of coal. These figures do not include the methane evolved during the period elapsing immediately after breakage at the face.

Porter and Ovitz believe that methane is formed by slow decomposition of the coal, and they quote the work of Chamberlin, in which he crushed coal under a high vacuum, obtaining only a quantity of gas equal to one-fourth the volume obtained by bottling for six months. During two weeks after mining they found that a certain coal lost three-fourths of its own volume of gas, and after five months it has lost an amount equal to one and three-fourth times its own volume. They seem to think that this is a great deal, and in a chemical sense it may be, but from the practical standpoint it is of little importance except in the case of coal carriage in ships. If we consider the huge volume of air which sweeps constantly through a mine and the amount of gas given off by the coal during development work and before it is mined, this gas from the mined coal is unimportant; although, of course, immediately bad ventilation comes in, we have an entirely different situation. The loss in caloritic value due to the escape of this $1\frac{3}{4}$ volumes of methane if calculated out, is seen to be negligible as compared with other weathering losses.

Taffanel draws attention in his paper to the evolution of methane from coal in the mine, he, however, attacks the subject chiefly from the point of dust explosions; he gives figures for the quantities of gas given off by the samples upon which he experimented.

In this, as in every other action which we are to study in connexion with this subject, every coal has its own individuality, due in part to the particular condition of pressure, water, associated strata, etc., in the mine; and in part to the exceedingly complicated organic compounds, resins, albuminoids, etc., of which it is composed.

Absorption of Oxygen and Oxidation.

This subject will be taken up at length in subsequent pages, but we may perhaps here quote certain observers who have particularly studied underground conditions. Porter and Ovitz following various earlier writers, state that "the air in a poorly ventilated section or closed portion of a mine is deficient in oxygen, and contains much less carbon dioxide than it would if all the oxygen that must have been removed from the air by the coal were immediately split off in combination with carbon." This absorption of oxygen is due in part to the coal left in the walls and pillars,