NOTES FROM THE U. S. BUREAU OF MINES.*

ROCK STRATA GASES IN MINES OF THE EAST TINTIC DISTRICT, UTAH.

By G. E. McElroy.

THE development of certain mines in the East Tintic mining district, Utah, has been hindered considerably by the presence in the rock strata of heavy irrespirable gases which at times flood the lowest working places, as well as by abnormally high rock temperatures in the lower horizons. A study of these features was completed in the spring of this year.

The affected mines are on or near the crest of a large anticline composed of sedimentary rocks, almost entirely overlain by lava flows. The sedimentary rocks consist of a great thickness of quartzite separated from overlying limestones of considerable but varying thicknesses by a formation of pyritic shales, 300 to 500 feet thick, containing interbedded limestones.

As a rule, these heavy gases peculiar to this district, are not encountered in mining until the quartzite is pierced, although they occur in places in fissured zones in the overlying limestones. Abnormally high rock temperatures also appear to be limited to horizons close to the quartzite.

Calculation of samples to an air-free basis shows that the pure gas is primarily a mixture of carbon dioxide and nitrogen with the carbon dioxide in excess. The gas also contains some sulphur dioxide. The gas is 1.25 to 1.40 times as heavy as the adjacent air. The difference in weight causes the gas to drop to the lowest points, and form accumulations or pools. Diffusion with the mine air is relatively slow in quiet atmospheres but increases as the air motion is increased. The evidence gathered from the mines affected indicates that the heavy gases have resulted from oxidation of sulphides.

The necessity for good air motion at working places and the relatively slow rate of gas inflow, indicate that the best remedy is dilution of the gas inflow with large volumes of air by mechanical ventilation. Further details are given in a recent report issued by the bureau.

* Communicated by the Director.