

change in temperature ; carbonate of lime seems to be an exception to this, increased pressure appearing to make little difference.

3. Substances in the native state, as compared with those artificially prepared, are, as would be expected, less soluble, but they are sufficiently soluble to fully account for the profound geological changes that have been produced by carbonic acid gas.

IX.—NOTE ON SULPHURETTED HYDROGEN.

By P. CASAMAJOR.

In 1873, Mr. William Skey, Analyst to the Geological Survey of New Zealand, published some interesting observations* on the production of sulphuretted hydrogen, when a voltaic couple is formed with zinc as the positive, and a metallic sulphuret as the negative plate. When placed in contact with zinc, or in communication with this metal, by means of a wire, many sulphurets give sulphuretted hydrogen very freely, with sulphuric or hydrochloric acid, which alone would not give any in contact with these acids. This happens with galena and sulphuret of copper.

I have had occasion lately to apply these researches of Mr. Skey to the production of sulphuretted hydrogen from sulphuret of iron, which refused to give it in the presence of sulphuric acid diluted with ten times its volume of water. I believe that the greater part of the sulphuret of iron sold to chemists possesses this resistance to acids. I have found none lately which gave sulphuretted hydrogen easily, and I had accumulated several pounds lately possessing this undesirable quality.

After a few trials I was able to obtain an abundant supply of sulphuretted hydrogen from any sample of sulphuret of iron, by proceeding as follows: Enough mercury is put in a bottle to cover the bottom entirely. Over this diluted sulphuric acid is poured, and some pieces of zinc are thrown in, which immediately sink in the mercury, forming a zinc amalgam with great excess of mercury. No action takes place between the zinc and the acid. If now a few pieces of sulphuret of iron are thrown in the bottle, they will sink to the mercury, and a copious discharge of sulphuretted hydrogen will take place from the surface of the sulphuret of iron. This production will continue with remarkable regularity until either the zinc, the sulphuret of iron, or the sulphuric acid is exhausted. As to the mercury, it

* *Chemical News*, 27, 161.

only intervenes indirectly in the reaction, and it does not require to be renewed.

In place of sulphuret of iron I have tried galena, iron pyrites and copper pyrites. These all give sulphuretted hydrogen, but very slowly. With galena the action soon ceases as the mineral becomes coated with sulphate of lead. By leaving galena in contact with the zinc amalgam for several hours, its surface becomes coated with bright lead amalgam.

With iron and copper pyrites comparatively little sulphuret of hydrogen is given off, but there is a considerable production of hydrogen. In this case the sulphurets act mainly as conductors, in the same manner as a piece of retort carbon.