PYRITE.

Pyrite or *iron pyrites* is a yellow mineral of metallic lustre consisting of the disulphide of iron, FeS_2. It occurs in massive form or as crystals, usually of cubic or octahedral habit. When pure it contains 46·6 per cent of iron and 53·4 per cent of sulphur.

Pyrite is one of the most widely distributed minerals, occurring in rocks of every type and age. It is also a common vein mineral, in some cases constituting practically the entire vein matter.

USES.

The main use of pyrite is as a source of sulphur in the manufacturing of sulphuric acid. The mineral is roasted in an oxidizing atmosphere, in specially designed furnaces. The sulphur content burns to sulphur dioxide (SO_2), and the iron to ferric oxide (Fe_2O_3). The gaseous sulphur dioxide is further treated to convert it into the trioxide (SO_3), which on taking up water becomes sulphuric acid (H_2SO_4). The ferric oxide which is the solid product of the roasting process, often spoken of as *pyrite residue* or *cinder*, is of the same composition as hematite. It is frequently smelted for its iron content, or, if the original pyrite contained copper, gold or silver values, these metals may be extracted by smelting or some other metallurgical process. The pyrite residue is used also for making paint. It is a brilliant red and makes the pigment known as *red oxide* or *Indian red*. The residue from a well roasted pyrite contains about one-half a per cent of sulphur.

In his report on pyrites,[1] Dr. Wilson states that "pyrites suitable for acid making should contain as much sulphur as possible.....The greater number of acid makers demand a product containing not less than 42 per cent sulphur; there are,

[1] "Pyrites in Canada," by Dr. A. W. G. Wilson, Report No. 167, Mines Branch.
This report deals in detail with the subject of pyrite, its occurrence in Canada, the methods of exploitation, dressing, and its uses. There are chapters on sulphuric acid making and the use of pyrite in the pulp industry.