a sweet and afterwards a bitter, rough taste. It stains the skin, but does not redden litmus, as, owing to its powerful oxidizing properties, it destroys the colouring matter of the paper, at the same time turning it brown, from deposition of hydrated peroxide of manganese.

So far as we know, manganese is not used in the arts in a pure state, but as an oxide. Its value depends upon the oxygen which it contains, and the facility with which it parts with this useful gas. Vast beds of it have been opened up at Brandon, Chittenden and Irasburg, in Vt., and it is found in several other localities in the United States. In the manufacture of the chloride of lime which is used so extensively for bleaching linen and paper, 1 part of the binoxide of manganese, 1½ parts of common salt, 2 parts of concentrated sulphuric acid, and two parts of water, are mixed together in a retort, to which heat is applied. By their action which takes place in the retort, the salt which is a chloride of sodium, gives off its chloride and the gas is conveyed into chambers containing hydrate of lime. The lime absorbs the gas, and in this condition it is as conveniently exported as the chloride of lime, so well known as a disinfectant, and so much used for bleaching purposes. The binoxide of manganese gives off its oxygen freely at a comparatively moderate heat; hence, its adaptibility for obtaining oxygen gas in large quantities and at a moderate cost. It is also employed in the manufacture of steel, by mixing a small quantity with ground charcoal, in the crucibles containing the iron to be smelted and converted into steel.—*Scien. Amer.*

THALLIUM AND ITS POISONING PROPERTIES.

The history of this new metal has been the subject of a dispute for priority between Mr. Crookes and M. Lamy. The latter gentleman, in a paper addressed to the Academy of Sciences, now announces a property of that metal, the discovery of which undoubtedly belongs to him, viz., its deleterious power. Having experienced certain pains, especially in his lower limbs, while pursuing his studies on thallium, he was induced to attribute them to a noxious influence of the metal; and in order to ascertain whether such was the fact, he dissolved five grammes of sulphate of thallium in milk, and offered it to two puppies, each about two months old. But after tasting the liquid they left it, and could not be induced to take any more. On the following day the milk, which had been left in the yard, had disappeared, and it soon turned out that it had been partaken of by a dog, two hens, and six ducks. For a few hours after ingestion the dog became sad, and refused to eat. During the night it was seized with violent gripes, which caused it to utter piercing cries. Its features had undergone a change; its back was bent up, through the effect of pain, the seat of which was evidently in the intestines. Its hind legs, after a continuance of convulsive motions, became paralysed, and it died sixty-four hours after taking the poison. On the day before its death a hen and six ducks died, and in those which were watched in time the paralysis of the legs was remarked. The two puppies, which had scarcely touched the milk, had meanwhile shown symptoms of fatigue; by degrees they were seized with convulsive trembling, and could hardly stand; then came the acute pains, which ended in death, although every precaution had been taken, apparently in good time, to save their lives. All these animals being subjected to dissection, there could not be found the slightest corrosion or even inflammation of any consequence; only the gall bladder of the dog was found considerably extended, and in some of the ducks various serous membranes; that of the liver especially had assumed a whitish and granulous appearance. As to the nature of the poison, if there could have been any doubt about it, it would have been at once dispelled by the characteristic green band peculiar to thallium in the spectrum analysis of the organs of the dead animals. Eight days later, another hen was taken ill. Its wings hung down, it could hardly walk, and when it wanted to peck its food, its neck seemed to have lost the power of bending down sufficiently, so that its beak did not reach the food. The hen was killed, and thallium found in the intestines, but in a very small dose indeed, and the other organs did not contain any. M. Lamy next administered a decigramme (a grain and a half) of the sulphate to a dog two months old, and it died forty hours after taking it. Hence M. Lamy justly infers that sulphate of thallium is a powerful poison, producing pain in the intestines and paralysis of the lower members. This poison and the nitrate have but little taste, and might therefore be used for criminal purposes; but fortunately there is not a poison that can be traced with more certainty through spectrum analysis than this. This new method of analysis bids fair to render excellent service in cases relating to forensic medicine.

ECONOMICAL ADVANTAGES OF SYSTEM.

Persons who have noticed how work is carried on in many of our large machine-shops, cannot but wonder why it is that no established system and routine is laid down to be observed by the workmen. The advantages of such a plan are too obvious to require any comment; and it is, as we have remarked, incredible how many things are left to take care of themselves, that should have been regularly classified, and arranged with reference to the demands of the work. Let us take, for instance, the item of mandrils, as they are called here; or arbors, as they are better known in some other parts. These valuable, and indeed indispensable aids to machine work in too many instances have no more care or attention bestowed upon them than if they were scrap-iron. They are often made of iron, instead of steel, and are cut, hacked, battered, and ground in the centres, by careless workmen, until they are utterly useless. A good mandril costs too much money to be subjected to such usage, and this is but a little part of the evil; for where such bad practices prevail there are not likely to be good workmen, and no shop can create or maintain a reputation where such carelessness is permitted.

Such folly and wastefulness as this must and should receive the severest condemnation of every right-thinking person. System as applied to the use of mandrils, is not the only place where it might be adopted with good results. Let us take the matter of measurement, for instance. In too