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X. *On the Alteration which Light produces on Red sulphurated Arsenic, known under the Name of Realgar. Read in the French Institute by B. G. SAGE, Director of the First School of Mines*.*

LIGHT alters the red colours of oxides or metallic calces. Minium as well as red oxide of mercury, when exposed to the light, becomes black, though in close glass jars.

One of the most celebrated chemists, Scheele, made known that muriate of silver lost its white colour by light even when under water. The same philosopher, having decomposed the light by means of a prism, found that muriate of silver, heretofore known under the name of *luna cornea*, was coloured

In 4 seconds, by	- the violet ray;
In 25 seconds, by	- the purple ray;
In 29 seconds, by	- the blue ray;
In 37 seconds, by	- the green ray;
In 5 minutes, by	- the yellow ray;
In 12 minutes, by	- the orange ray;
In 20 minutes, by	- the red ray.

Native realgar, which is found in considerable masses among the volcanic productions of Japan, is of a brilliant purple red when it has been polished. Large masses of it are found also in the tin mines in the province of Kianfu, five days journey from Nankin. Le Camus had a piece of it which weighed twenty-eight pounds. The same naturalist has some worked realgar, in the centre of which there is a vein of calcareous spar. The Chinese and Indians employ it for making pagodas and vases. Having put one of these pagodas into a glass case, to which neither the sun nor external air had any access, I found, some months after, that the pagoda had lost its brilliancy and its red colour, and was covered with an efflorescence of an orange-yellow colour, which readily detached itself and fell on the stand: having collected this efflorescence, and fused it in a crucible, it presented realgar.

I have made known that orpiment, or yellow ore of arsenic, the flakes of which are of a brilliant golden-yellow colour, and semi-transparent, passes to the state of realgar, or sulphurated red ore of arsenic, when fused or sublimated. I have presented to the Institute a piece of orpiment, a part of which I have made to pass to the state of realgar by applying beneath it the flame of a taper by means of a blowpipe: for this purpose, the flame must not be too strong.

* From the same.

Pott has made known that orpiment contains only a tenth of sulphur. As this substance passes to the state of realgar merely by the action of heat, and afterwards repasses to the state of orpiment by the contact of light, it is evident that these two substances, so different in colour, are composed of the same elements. Having taken the realgar pagoda from the glass case, I saw that a part of it, which had not been exposed to the immediate contact of the light, had retained its colour and brilliancy.

The realgar which is sublimated at the Solfaterra under the form of octaedral crystals, known under the name of *ruby of arsenic*, effloresces also by the light.

XI. *The Marquis of Worcester's Scantlings of Inventions.*

[This little tract, first published in 1655, being not easy to be met with, we insert a copy of it at the request of a number of our readers, and we flatter ourselves it will be acceptable to all of them.]

A Century of the Names and Scantlings of Inventions by me already practised.

I. *Seals abundantly significant.*

SEVERAL sorts of seals, some showing by screws, others by gages fastening or unfastening all the marks at once; others by additional points and imaginary places, proportionable to ordinary escocheons and seals at arms, each way palpably and punctually setting down (yet private from all others but the owner, and by his assent) the day of the month, the day of the week, the month of the year, the year of our Lord, the names of the witnesses, and the individual place where any thing was sealed, though in ten thousand several places, together with the very number of lines contained in a contract, whereby falsification may be discovered, and manifestly proved, being upon good grounds suspected.

Upon any of these seals a man may keep accounts of receipts and disbursements from one farthing to an hundred millions, punctually showing each pound, shilling, penny, or farthing.

By these seals likewise any letter, through written but in English, may be read and understood in eight several languages, and in English itself to clean contrary and different sense, unknown to any but the correspondent, and not to be read or understood by him neither, if opened before it arrive unto him; so that neither threats, nor hopes of reward, can
make