XCI. Note of some experiments on the vapour of sulphuric ether

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To cite this article: John Murray F.L.S. M.W.S. (1822) XCI. Note of some experiments on the vapour of sulphuric ether , Philosophical Magazine Series 1, 60:296, 448-449, DOI: [10.1080/14786442208644244](https://doi.org/10.1080/14786442208644244)

To link to this article: <http://dx.doi.org/10.1080/14786442208644244>

Published online: 29 Jul 2009.

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into water. If lime-water be formed, it will become turbid by blowing through it by means of a quill: in this case, too, the calculus will be that of oxalate of lime. It may be merely added, if that under examination be the triple calculus, it will yield volatile ammonia, on treatment with caustic potassa. I need not particularize; and these are the *general* indices.

I always am, with the highest respect, gentlemen,
Your very faithful and obedient servant,

J. MURRAY.

P.S.—I notice a slight error in my paper on “Solution developed from the Action of Sulphuric Acid on Chlorate of Potassa in Water.” *It dissolves gold leaf very readily*; the foil appearing finally a very thin perforated film having lost all its metalline appearance. Blue colours are promptly discharged. Sodium does not kindle when projected on its surface, though potassium inflames very readily. J. M.

XCI. *Note of some Experiments on the Vapour of Sulphuric Ether.* By JOHN MURRAY, F.L.S. M.W.S. &c. &c.

To the Editors of the Philosophical Magazine and Journal.

GENTLEMEN,—I AM not aware that the following phænomena are any where recorded; many of the experiments detailed are, perhaps, sufficiently curious and interesting to merit a place in your Journal.

The copious and continued extrication of inflammable vapour from the surface of ether is remarkable, and may be made subservient to a chain of experiments illustrative of its physical and chemical character.

The vapour may be poured in an invisible form from one vessel to another, as in the case of carbonic acid gas. An ignited taper will be the test of its presence. In like manner the vapour may be laved or pumped out into other vessels, or transferred by a wide stop-cock laterally, or through a funnel.

The vapour, however, being poured into a glass funnel with a stem eight inches long and the diameter of the bore 1-8th to 1-16th inch diameter, did not flow out, but remained in the funnel above.

The sulphuric ether vapour poured on carbonic acid gas, mingles with it, and from this uniform diffusion, the gas, &c. burn with a diluted blue flame to the bottom of the cylinder containing them.

Mixed with hydrogen, it burns with a lambent blue flame.

With nitrous gas, ignition does not produce explosion. It
burns

burns tranquilly and in all respects like a mixture of nitrous gas and hydrogen, having an increased illuminating power, and of a green colour.

Equal parts of the ethereal vapour and nitrous oxide burnt with a flame resembling the last in colour, but the ignition was rapid and approximating the explosive range.

The vapour does not seem to diffuse in olefiant gas,—this last burning with its usual illuminating effect, and it is succeeded by a blueish flame, such a one as seemed to be characteristic of the vapour.

The ethereal vapour poured on chlorine gas in day light, gives rise to the immediate formation of clouds of muriatic acid gas, accompanied by the exhalation of a kind of *spray* from the bottom of the vessel.

Equal volumes of sulphuric ether vapour and ammoniacal gas burn tranquilly to the end, with reddish green flame.

Equal volumes of vapour and cyanogen diluted the flame, and made it apparently more luminous.

Equal parts by bulk of the vapour and sulphuretted hydrogen burn with a lambent blue flame: little sulphur is deposited, and the combustion gives rise to the odour of garlic.

It inflames on the surface of naphtha, water, &c. Poured on the surface of nitric and muriatic acids, it burns with slight alteration of tint.

On ammonia in solution the flame has a reddish tint. The combustion from the surface of sulphuric acid is more rapid, somewhat of an explosive kind, and the flame is of a red cast.

Oct. 7, 1822.

J. MURRAY.

P.S. *Gold-leaf* was immersed in the vapour of sulphuric ether, and allowed to repose for four weeks, without any perceptible change having been superinduced. Thin slips of caoutchouc exhibited no alteration whatever in eight days: a small quantity of *distilled water* was at the termination of this period added. In some days the slips were slightly *blanched*, the edges being most whitened. In the change here produced there seemed an approximation to the consistency of *leather*.

I shall only take leave to add, that the thin slips of caoutchouc referred to were obtained by inflating, by means of a condenser, small bottles of Indian rubber in the way described by Mr. Forster.—I have thus expanded bottles of caoutchouc, from the size of a walnut to the diameter of six inches and more. I have found strips of the caoutchouc so extended, *admirable valves* for the condenser of my gas blowpipe."

XCII. *True apparent Right Ascension of Dr. MASKELYNE'S 36 Stars for every Day in the Year 1823, at the time of passing the Meridian of Greenwich. Calculated from BESSEL'S Tables of 1820.*

Vol. 60. No. 296. Dec. 1822.

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