
ARTICLE VII.—DANGER ARISING FROM THE SUBSTITUTION OF BENZOLE FOR TURPENTINE IN PAINT, &c.—by S. Sturton, Esq., Associate Member.

(Read before the Society, May 6th, 1863.)

At our last meeting, I briefly called your attention to the danger arising from the substitution of Benzole for Turpentine. The late fire at Gingras' Coach Factory has determined me to report in a written form the remarks I then made, not without some hope that I may help to prevent further calamities.

Benzole or Benzine is the chemical name of a very light and inflammable fluid obtained from Gas Tar and Coal Oil. At first it was obtained from Gum Benzoin, to which circumstance it owes its chemical name of Benzole.

The article which is now being sold as a substitute for Turpentine may be regarded practically as Benzole, and is known in commerce under the name of Patent Turpentine, Mineral Turpentine, Turpentoleum, Naptha, Spirit of Coal Oil, &c. ; and several hundred barrels of it, under these various names, are stored in the Lower Town of Quebec.

Benzole is so inflammable that when once ignited it is practically impossible to extinguish it, water only affords it facilities to spread the more rapidly all around.

If a few drops are introduced into a dry soda-water bottle and shaken for a few seconds it forms an explosive mixture that detonates with a flash the moment it approaches the flame of a candle. (This experiment Mr. S. performed before the audience, using twelve drops of the "Turpentoleum" sold in a paint store in Quebec.)

Turpentine does not boil till it reaches a temperature of 312° , whereas Benzole boils at 176° , or 136° lower than Turpentine : this low boiling point causes it to evaporate very rapidly at the usual temperature of a house or workshop. It is this rapid evaporation which causes the paint to dry so quickly and makes the workman complain that it will not work. As rapidly as the paint dries, so rapidly is the air filling with an explosive mixture ready to ignite on the first approach of a light.

The density of the vapour of Benzole is 2.77 or nearly three times that of air, so that it will often rise out of a vessel, then descend on the outside, and roll along the floor as an explosive wave ready for instant ignition. This was the case at the fire in St. Ursule Street. This invisible explosive stratum of gas occupied the lower part of the shop, a lighted candle fell into it, and the whole flashed off "like liquid gunpowder." A Varnish Factory at Montreal, has also been recently blown up with fearful violence from the vapor of this same dangerous Benzole.

If a store of this, near the river, takes fire and the lighted liquid runs into the Saint Lawrence, it will spread over the River and destroy the shipping. *This fact can be fully proved by experiment, and the information should not be neglected by the authorities.*

It is no part of my duty to point out the Police regulations by which this danger is to be avoided. But where it is used, let doors and windows be always kept open, in fact employ the same precautions as if gas were rapidly escaping in the room.

I would also urge the absolute necessity of using the Safety Lamp for light in all cellars and places where Benzole is stored. This precaution would remove much of the danger, and after this warning has been made public the neglect of such a necessary precaution will be morally if not legally criminal.