Apparatus for the condensation of smoke by statical electricity

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addition of soluble starch, which by the sudden blue coloration indicates the liberation of iodine.

Solutions were used containing 0.25 gr. of iodic acid in a litre of water, or the same quantity in the litre of a mixture of equal parts of glycerine and water.

The sulphurous acid was used of such concentration that 5 cub. cent. of its solution in water just decolorized 2 cub. cent. of a one-per-cent. solution of potassium permanganate.

On mixing 10 cub. cent. of solution of iodic acid with 3 cub. cent. of sulphurous acid, the reaction sets in in about 5 minutes, and in the various glass vessels shows an inert space above, which lasts for a time depending on the temperature.

The iodine reaction presents a phenomenon to which I shall afterwards recur; that is, the occurrence of this reaction in the centre of the tube. If a vertical glass tube 4 millim. in the clear is filled by aspiration, and subsequent closing by an indiarubber tube and clamp, from the active liquid which is contained in a wide glass cylinder, a fine blue thread is seen to form in the tube, while the surrounding liquid remains clear and colourless. The blue coloration extends gradually from the thread throughout the entire liquid column.

It could be observed in this phenomenon that the reaction in the wider vessel set in sooner than in the narrow tube.

If either the hydrate-of-chloral or the iodic-acid mixture is placed in a vessel in which the liquids can be drawn through fine glass beads, *no chemical reaction at all* is produced.

It follows thus from these experiments:—

1. That in liquids the space of chemical action is bounded by an inactive zone (*the inert space*), where the liquid is in contact with the air, or is separated from it by a fine membrane.
2. That the reactions take place more slowly in narrow than in wide tubes.
3. That capillary spaces can entirely suspend chemical reactions.

As I am engaged in continuing this investigation, I hope soon, after a further extension of the experiments and the use of other chemical reactions, to be able to report fresh results.—*Berliner Sitzungsberichte*, November 4, 1886.

APPARATUS FOR THE CONDENSATION OF SMOKE BY STATICAL ELECTRICITY. BY H. AMAURY.

A glass cylinder is placed on a tripod perforated in the centre, and below it a tin-plate box with an opening in the side and at the top, in which touch-paper, tinder, or tobacco can be burned, and thus the cylinder be filled with smoke. To the top of the cylinder is fitted a small lid in which is a vertical tube. At half the height of the cylinder are two diametrically opposite tubuli, through which pass metal rods; these are connected with vertical rods parallel to the sides and provided with points. If these combs are connected with the conductors of an electrical machine, and the latter is worked, the smoke is condensed.—*Beiblätter der Physik*, No. 2, 1887.