

DISCUSSION.

Mr. T. Vaughan Hughes (*communicated*): I should like to ask Dr. Senter a few questions, as I am much interested in his Paper. Has he found either a dissolution of the platinum or the formation of the "oxidising agent" when the anode was revolved or the electrolyte caused to circulate? I have noticed in the case of electrolyses of organic compounds a very marked difference in the nature of oxidised bodies formed with the same C.D. and E.M.F. when the anode was stationary and when revolved, or the electrolyte caused to circulate. It would be interesting so to modify his experimental equipment in order to test this point, which to my mind is of great importance.

Dr. Senter (*communicated reply*): With regard to the first point raised by Mr. Hughes, I made one or two preliminary experiments with a rotating anode and observed a similar dissolution of the platinum and, if anything, rather more of the oxidising agent. I do not, however, lay much stress on these results, as they were of a preliminary nature, and even in the most careful experiments without stirring there were considerable differences in the amount of the oxidising agent, although the conditions were exactly similar, as far as could be secured.

Mr. Hughes mentions that he has "observed in the course of electrolyses of organic compounds a very marked difference in the nature of oxidised bodies formed with the same C.D. and E.M.F. when the anode is stationary and when revolved." It is not clear what is meant by "the same E.M.F." in this case. The E.M.F. which conditions the reaction is, of course, that between the anode and the solution, and this does not necessarily stand in any direct relation to that applied at the terminals of the electrolytic cell. Even if the latter is kept fairly constant, the E.M.F. between the stirred and the unstirred liquid respectively and the anode will be different, as in the former case the concentration of the substance undergoing oxidation will be greater in the neighbourhood of the pole than in the latter case, the substance being usually removed faster than it can be supplied by diffusion in the unstirred liquid. Therefore it seems probable that it is really a difference of E.M.F. in the two cases that conditions the difference in the products. I am quite of the opinion of Mr. Hughes that the problem dealt with in my Paper should be further investigated with a rotating anode, and intend on an early opportunity to experiment further on the matter.