The apparatus I have used was placed in my hands, during last winter, by Dr. Pulvermacher himself. He is a scientific man, and well acquainted with physical science generally, nor is he, I presume, responsible for the manner in which his invention has been extolled, as a sort of universal panacea, by the London agent, in the public advertisements. Each element of this battery consists of a small piece of wood, around which are wound two wires, nearly but not quite in contact, one of these wires consisting of zinc, the other of gilded copper These represent the plates in Volta's pile; each terminates in a ring, by which it is connected with the wires of the next link or member of the chain, the zinc of one being united with the copper of the next, and so on. When one of these links is immersed in a fluid capable of exciting a chemical action on the zinc, enough is retained by capiliary attraction between the folds of wire to disturb the electric equilibrium of the metals, and to throw the negative and positive fluids into a state of current. The exciting fluid recommended by Dr. Pulvermacher is common vinegar, and if one of his chains be immersed in that fluid for a minute, and then lifted out, so that all not retained by capillary action may drain off, it will be at once fit for use.

The electricity excited by this apparatus is necessarily small in quantity, as the amount of electricity evolved must be in a ratio with the intensity of the chemical action exerted on the more oxidizable metal; yet its tension is tolerably high. It is indeed sufficient, both in quantity and tension, for the developement of physiological phenomena. The following experiments will illustrate these properties, a chain of fifty alternations being employed:—

A. A thin piece of platinum wire being attached to the terminal links, they were immersed in water acidulated by sulphuric acid, and very distinct evolution of exceedingly minute bubbles of oxygen and hydrogen were evolved from the two wires. The dilute acid being replaced by a solution of iodide of potassium mixed with starch, iodine was almost immediately set free at the wire where the positive current entered the fluid. The quantity of these electrolytes decomposed was exceedingly small, as the electrolytic power of the evolved current would of course bear relation to the amount of effective chemical action going on in the links of the chain.

B. The platinum wires were then connected with an astatic galvanometer; the wires were immediately deviated under the influence of the current, but the latter was not sufficient to retain the needles at right angles to their normal position. The astatic galvanometer was then replaced by an ordinary one, having a coil of thirty folds of wire, and carrying a magnetic needle five inches long. The current was then barely able to produce a permanent deviation from the magnetic meridian of five degrees. This feeble action on the magnetic needle is explained by the small *quantity* of electricity circulating through the chain.

C. The chain being held in a vertical position by one end, the terminal link was allowed to touch for an instant the lower plate of a condenser, 6 inches in diameter, in connection with a gold-leaf electrometer. On lifting off the upper plate the gold leaves separated to the extent of a couple of inches. When only half of the chain was brought in contact with the electrometer, considerable divergences also occurred. This experiment well illustrates the comparative high tension of the evolved electricity.

D. The first and last link of the chain being placed in cups of water, and a finger of each hand being immersed respectively into the two cups, a smart shock