takes place, but it will serve the purpose of helping to a better understanding of the different actions of the two poles.

And now as to instruments required. First, a good galvanic battery. The ordinary 24-cell zinc and carbon element portable battery, if well constructed, will prove adequate to the treatment of the general run of cases, and if well taken care of will not disappoint one. It should be provided with means of gradually increasing and decreasing the strength of the current without interrupting it. Next we require a current measure or milliampere-meter, which should have divisions of one-fifth of a milliampere, and should record up to at least two hundr. d and fifty. This instrument has revolutionized electrical practice by systematizing it. From it we tell if the current is passing at all, whether it is passing steadily, in which direction it is passing, and how strong it is. Flexible conducting wires, covered with some insulating material, are necessary; with them a pole of the battery is connected with the meter, and this in its turn to an electrode, while a third connects the other pole to a second electrode. The armamentarium is completed by electrodes of various sizes, shapes, and materials, a couple of insulated handles into which some of the electrodes fasten, a few binding screws, and some insulated copper wire, such as magnet wire, for emergencies. For electrodes for general use we require a small circular and a larger oblong one of brass, zinc, aluminum, or other metal, or of carbon. Convenient sizes are an inch and a half in diameter for the former, and five and a half by eight inches for the latter, which should be flexible also. They are generally covered with sponge, or absorbent cotton, which should always be thoroughly moistened with hot water before applying. To increase the conductivity a little ordinary salt may be added to the water; but when the electrode is to play the part of the positive pole, the substitution of carbonate of soda will prove more acceptable to the patient. These electrodes are used to complete the circuit; the active electrodes will be described as the occasion for their use arises.

Having collected our apparatus, the battery being charged with the proper bichromate fluid, the first step should be to ascertain if all is in good working order; there are several ways of testing this, the simplest being to make the connections as described, immerse the elements in the fluid, but, instead of attaching the wires to the electrodes, dip the ends in a bowl of water to which a little salt has been added, keeping them three or four inches apart, turn on the current gradually, and note if the meter shows a gradual and steady increase. To determine the polarity, the quickest way, and one that is always at hand, is to dip the ends of the wires in the water as before, and turn on the current; the pole at which the bubbles of gas collect most freely is the negative.

A simple experiment, from which we may learn much, is quite in place here. Plunge two platinum wires, connected with the respective poles of a galvanic battery, into a piece of fresh pork, allow the current to pass for a couple of minutes, and note the result. At one pole bubbles collect in much smaller numbers, for the water of the tissue contains only half as much oxygen as hydrogen, and it is the former we note. Apply a piece of litmus paper to the seat of puncture and it is at once reddened, showing the presence of acid. We have here oxygen and acid, hence it is the positive pole. At the other pole hydrogen is given off quite freely, and on applying the reddened litmus to this puncture its color is restored, showing the alkaline reaction at the negative pole. At each puncture is plainly visible an areola showing the zone of decomposition. Both wires are removed without difficulty. Repeat the experiment, using steel needles. At the positive pole no bubbles are given off at first, for the oxygen has combined with the metal to form an oxide of iron, which pigments the surrounding tissue; later on, when the needle is well encrusted with the oxide, bubbles of oxygen are visible. This needle is withdrawn with some difficulty on account of the encrustation and coagulation which has taken place about it, while the negative needle is withdrawn without trouble.

The same process takes place to a more marked extent in living tissue. The clot at a positive puncture is firm, and due to coagulation by the acids; the clot at the negative is soft, and due to the froth of the hydrogen bubbles. The tissue surrounding the positive puncture is drier than that at the negative, due partly to electro-osmosis, or transportation of fluids from