

Daniel Double Fluid Costant Primary Cell Voltaic Galvanic Chemical Part 2

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As it was shown in part one the **Daniel cell** is a double fluid primary voltaic or galvanic cell - **Figure 1. This cell is unique** among the many known galvanic cells that it is fully **reversible**. Normally other primary electrolytic cells are not reversible.

In the Volta pile the cells are made of zinc and silver coins alternating with pieces of cloth whetted with brine or regular kitchen salt solution in between them. When a current is drawn, on the cathode the zinc dissolves and turns zinc-chloride and on the silver coin anode gets enveloped by hydrogen gas. If one is to connect on outside current source in the reverse direction, zinc will not returns to the cathode and there is no hydrogen to go into solution

Since this cell not produces gas and therefore is not subject to polarization it supplied a fairly dependable constant current. Instead of releasing hydrogen while the zinc dissolved to form zinc sulfate solution, the electrons were supplied to the copper ions in the electrolyte, which plated out as copper metal on the copper electrode or on any nearby surface. Unfortunately this same action after some hours of operation plugged the pores of the porous clay pot by deposition of copper on it as the cell operated.

Fig 1. Daniel Double Fluid Primary Cell

Because of the complicated internal arrangements **the cell has a fairly large internal resistance**, protecting it against prolonged short circuits. Because the poisonous nature to copper sulfate on living cells, it kept algae problem in batteries operating long term under control. Daniel cell components can be left assembled after use, and the battery is continuously useable.

Daniel cells were widely used around since its invention in 1836 to the early part of the 1900s for laboratory experiments and railroad and telegraph signaling. The Daniel cells were very popular in France until the invention in 1866 of the [Leclanché cell](#).

Since humanity is in search of a reversible and long life secondary cell, and seemingly, after billions spent allegedly in looking, it would be worth while to experiment in some of these, and other cells to see if they may be able to help with our current energy-storing problem.

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