# CHESAPEAKE BAY

## Light Chart

2016

Designed and Assembled by Jonathan Ross

The first flickerings of inspiration for this chart appeared in Weems & Plath on a trip to Annapolis in May of 2016 when Jonathan and Melanie visited the Driftmier Annapolis home for the first time. A seemingly innocuous chart sat on the wall that, on closer inspection, was wired with LED lights to display the buoys and their flash patterns on the body of water that was depicted.

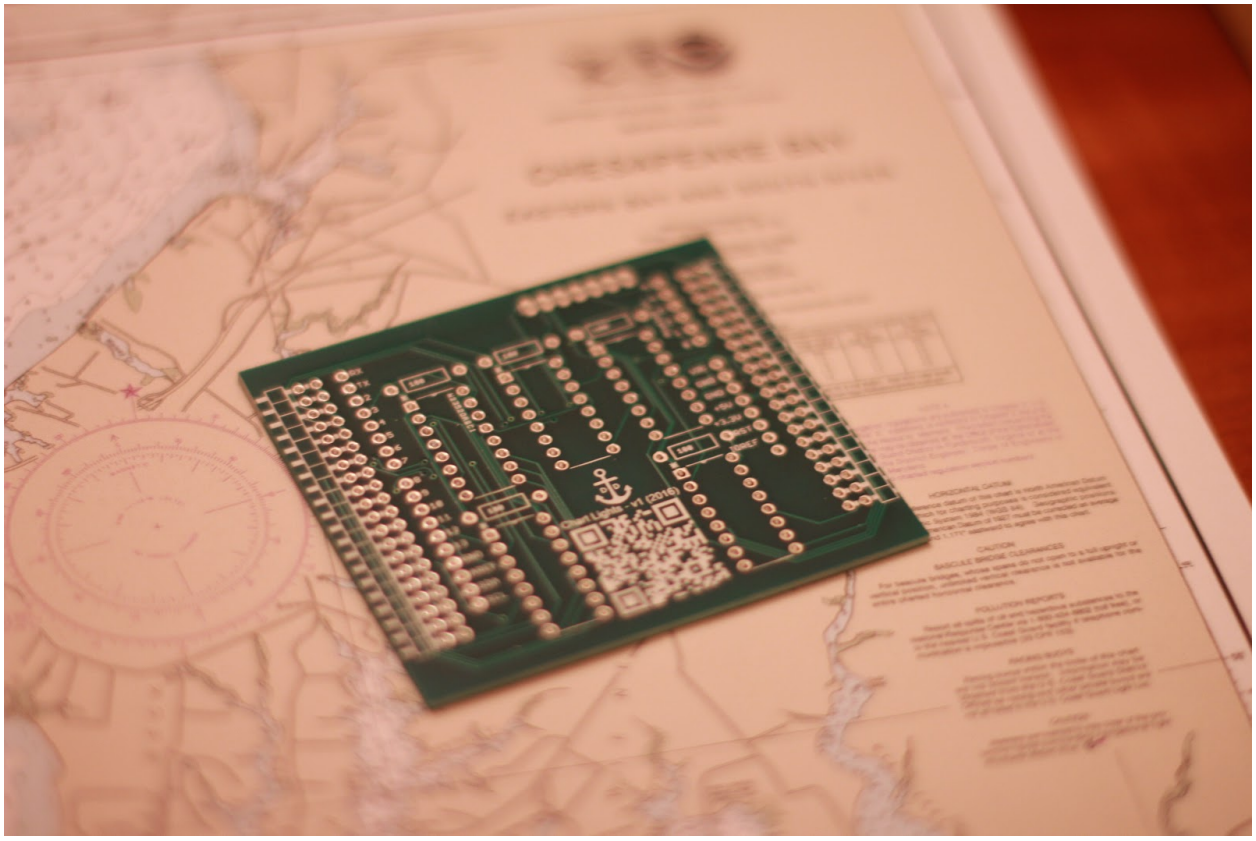
Later that summer David asked about the chart again - had Jonathan considered making one? Little did he know the wheels he started turning.

Since the chart seemed to have more than a passing interest for David, Jonathan started planning the project, thinking about what the software might look like, and the many details that would need to come together to make the whole.

On returning home from Virginia's wedding in July, the project started in earnest. Could it be done in time for David's September birthday, before Leighanna's wedding? From start to finish between the two girls' weddings: Trips to Metsker's maps rustled up an official chart of the Chesapeake; The U.S. Coast Guard's weekly lights lists revealed the location, color, and flashing patterns of the buoys filling the waterways surrounding David's home and boat; programs designed to sort through the information and translate it into the chart's display started coming together.

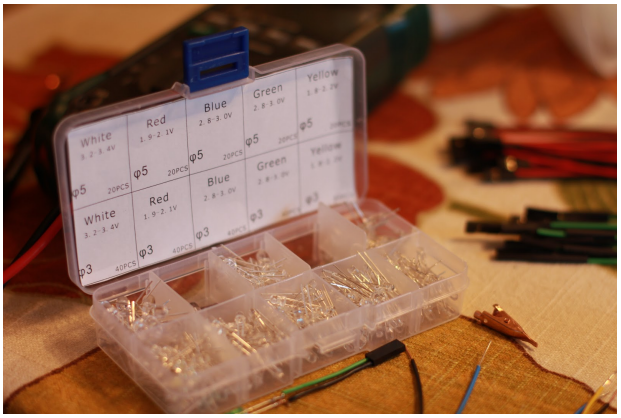
Choosing which lights to include was a process all on its own. First, the chart bounding box was recorded. Then, using the bounding box, a script queried the 2016 coast guard light list to reveal one hundred and thirty individual lights on the chart. With room for only forty lights, Jonathan wrote another script which determined the most prominent lights on Chesapeake Bay. That process picked out twenty lights, leaving twenty more slots available. The first two were filled by blue lights to mark David's home and his ship's berth (the exact latitude and longitude of both having been recorded during that first trip to Annapolis). Blue was chosen because it is not used for nautical navigation and therefore can't be confused for buoys. The eighteen remaining slots were then filled with the lights that were closest to those two blue lights making an even forty lights.

By following this process, the lights that appear on the chart are the ones that are most likely to be seen from David's home and those he is most likely to navigate by.



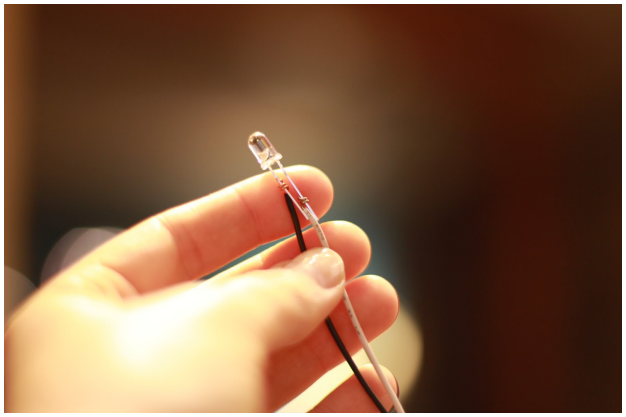
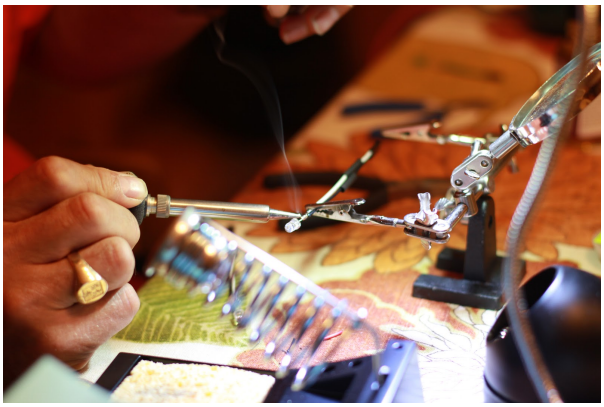
After designing the PCB board circuit the board was silk screened with a nautical monogram and a QR code. That code links to the open source files for the custom software, printed circuit board and each 3D printed part.

Next custom pieces began arriving from the 3D printers, boxes regularly appeared from Amazon, tools lay scattered across the office floor, and a large black shadow-box frame was on its way. And so the physical making process began.

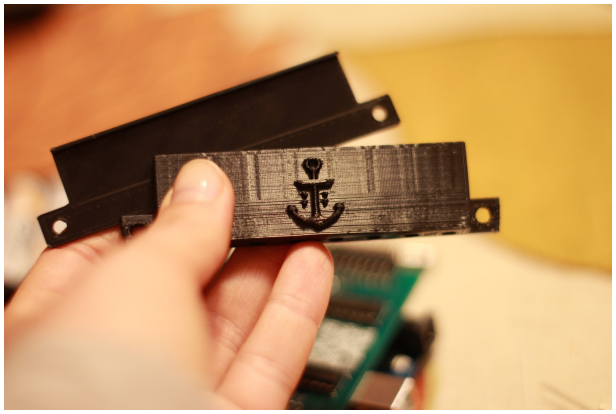
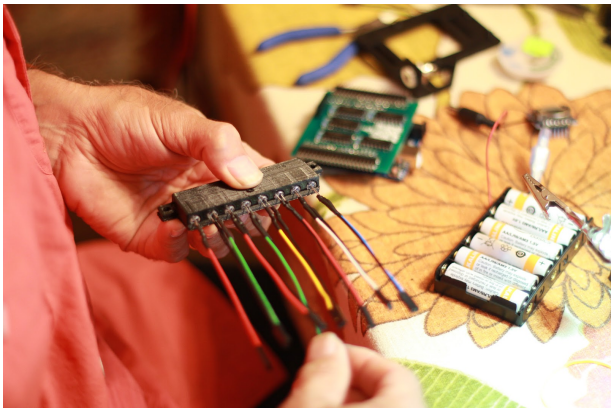


Evenings began filling up with soldering and detailed electrical work while Melanie read aloud and bits and bobs lay scattered everywhere in somewhat organized chaos.

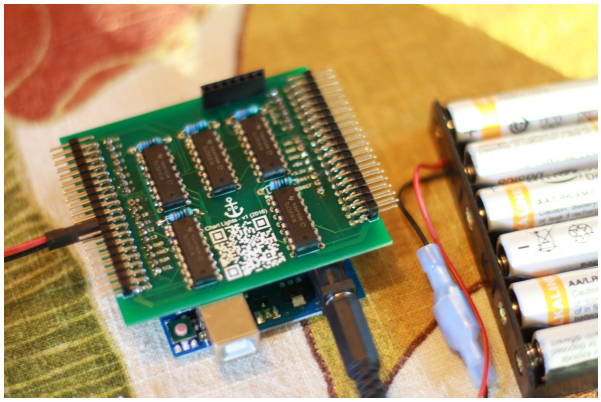
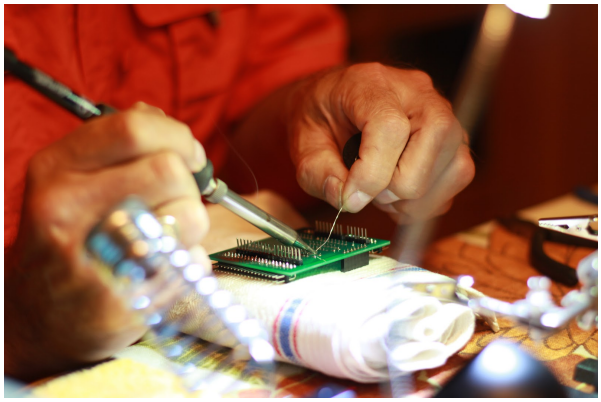
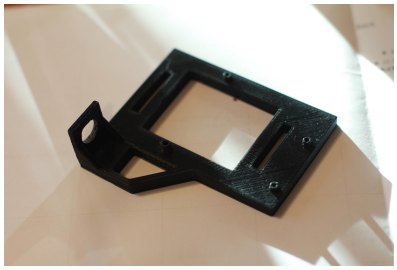
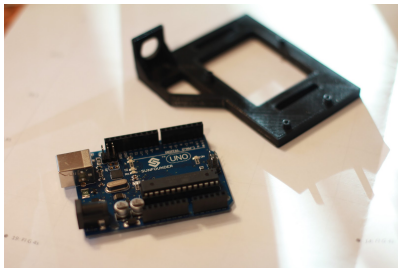
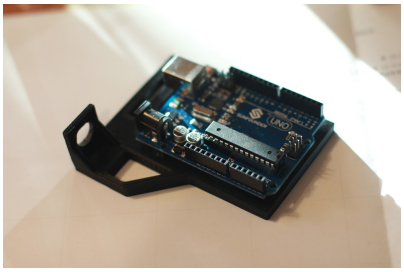

First, the lights needed to be assembled -- delicate soldering and wire twisting in abundance.

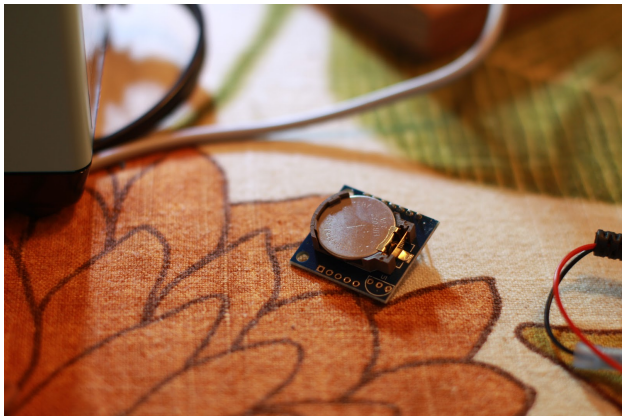
Once all of the lights were assembled and tested, they were slipped into their 3D printed custom mounts which join LED lights to fiber-optic cables.

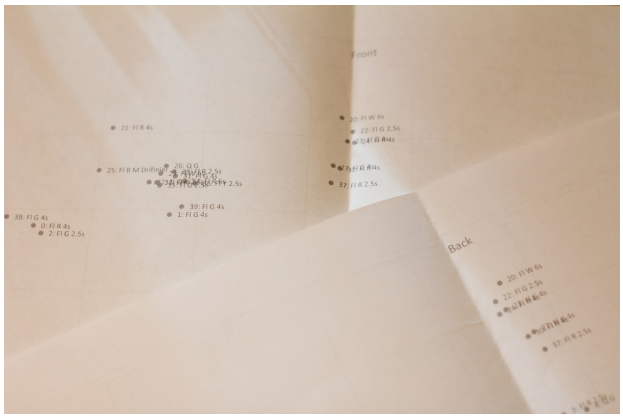
Next the assembled PCB was fitted to the Arduino controller, mounted on the 3D printed mount and attached to the backing board.

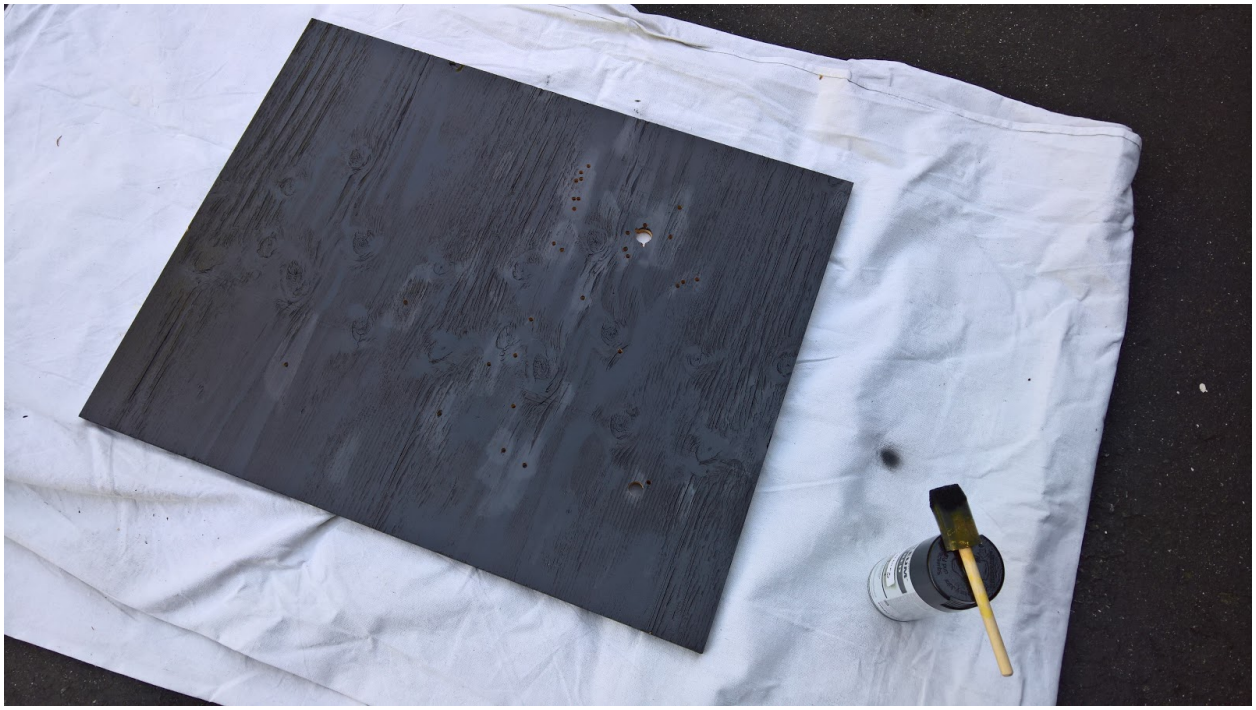
Once everything was pieced together and mounted everything was tested again.

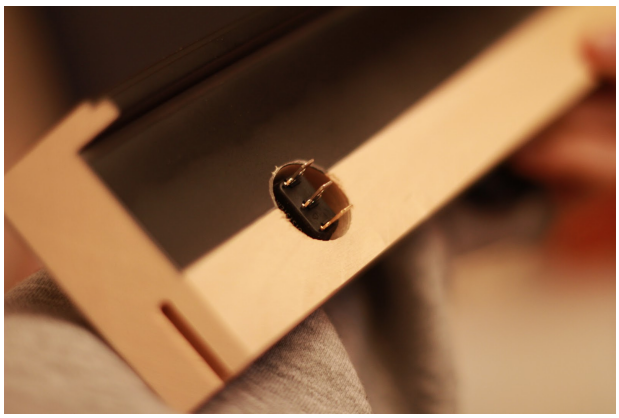
Switching to the chart itself, the coordinates had to be marked on parchment paper in order to drill the holes accurately in the back of the frame.



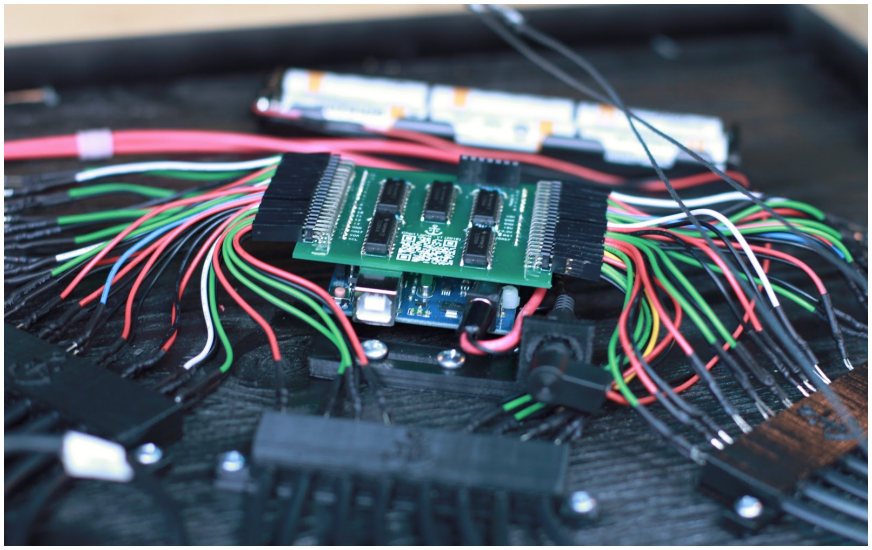

The back has its own story. When the Driftmiers moved from Seattle to Annapolis, they left a couple pieces of plywood. It was that plywood which Melanie painted black before drilling began to make room for the lights.

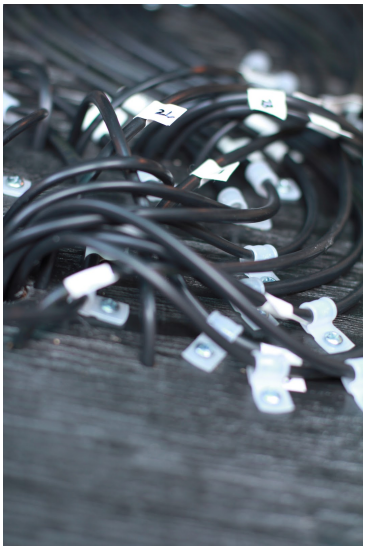


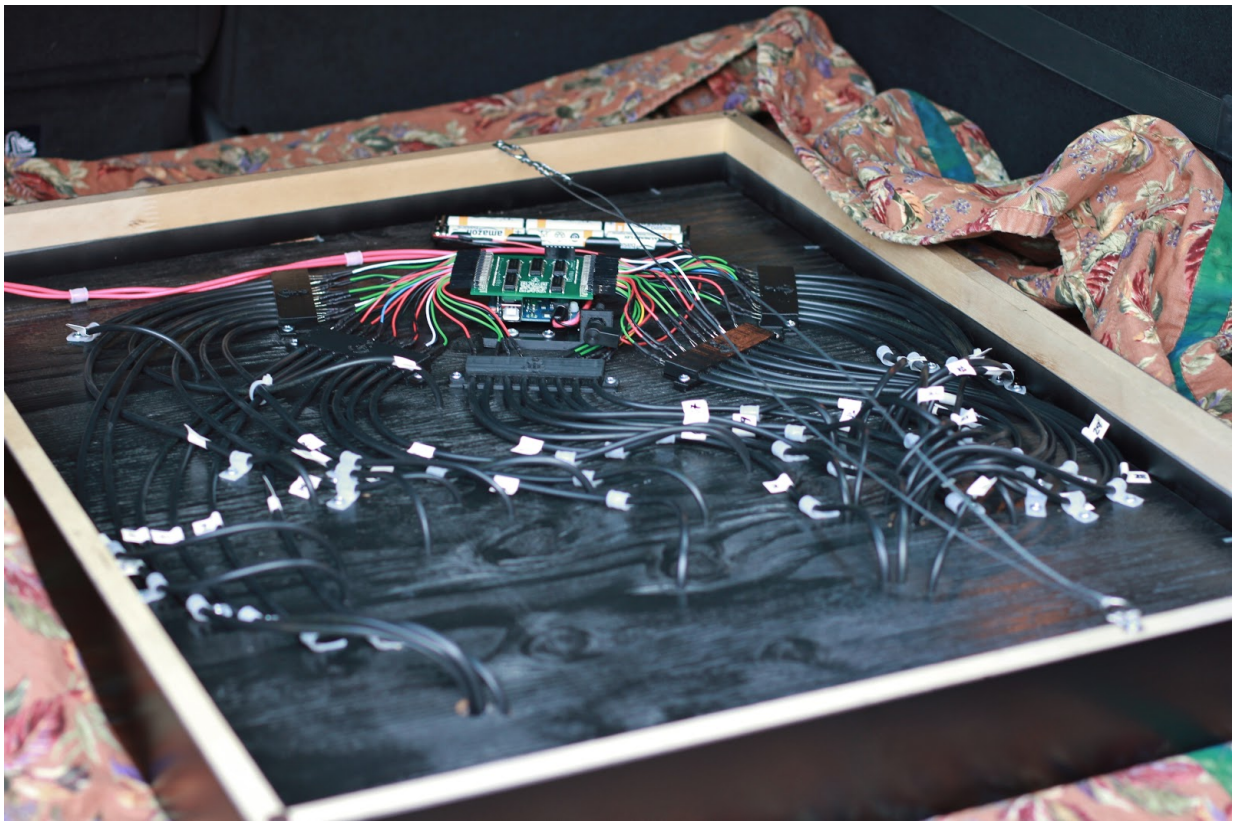
The frame itself got a quick drill through with the drill press to make room for the on and off switch that sits at the bottom right of the frame (for a right-handed chart viewer).



Then, the night before David's birthday dinner, drilling, threading, wiring, matting, and framing (along with a final dusting), brought all of the details together into one finished piece.







The chart then traveled from Seattle to Olympia for David’s surprise birthday dinner, carefully wrapped in a blanket and tucked into the back of the car.

Then, after a nearly 3,000 mile trip across the country, the chart arrived at its home in Annapolis. All that remains is for David to find the various hidden details hidden throughout the chart.


Just To See You Smile
by Tim McGraw
Stuffe