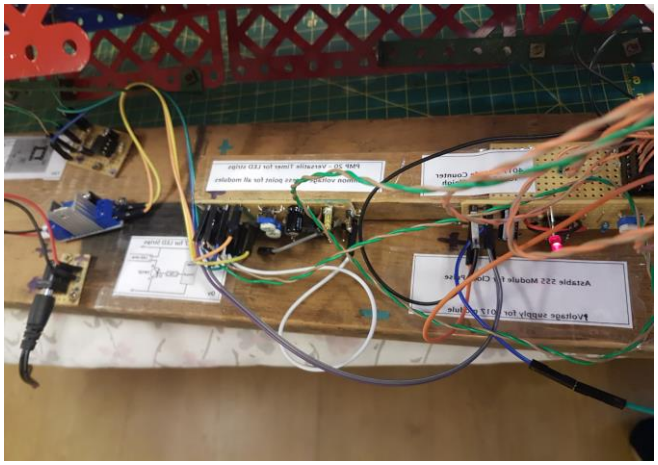
# Santa’s Sleigh Project

The Pocket Money Projects have been a great introduction for me into the world of electronics and are easily adaptable for use in my Meccano models.

This project uses two Random Light PMP12s for the twinkling star “night sky”, a PMP20 for the LED strips beneath the sleigh (adding the TIP127 transistor option as explained in the instructions), a PMP21 twin flasher for Rudolph and partner’s green and red flashing noses.

I used a combination of the 555 timer and the 4017 decade counter chip for the running lights on the side of Santa’s sleigh. This is not a PMP but I learned about the 555 & 4017 chip in Davy’s *“Introduction to Electronics”* and then went on to the web for a circuit design / step by step guide.

I found a great site for the 555 circuit https://www.circuitbasics.com/555-timer-basics-astable-mode/ and a easy to follow guide to the 4017 pinouts - https://www.homemade-circuits.com/how-to-understand-ic-4017-pin-outs/ . As Davy said, *“Google is your friend”.*

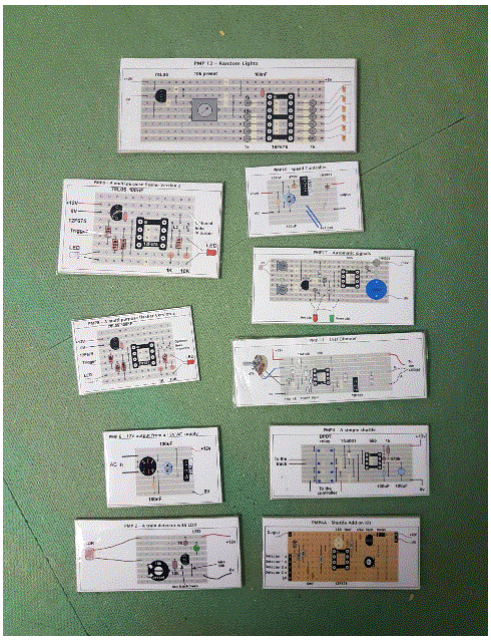


The power is via LM317 DC-DC Converter Buck Step Down Module Linear Regulator Adjustable Voltage Regulator Power Supply Board 5 for £3.31 seemed to me a pretty reasonable price! Rated at 1.5A there should be no problems with current usage for combining these applications to run from this one power source.

The astable 555 circuit worked fine on the breadboard. Translating it to veroboard was another matter and for the life of me I couldn’t see what the problem was. I looked and looked at the soldering and the connections but no joy! I asked Davy to cast an eye over it and guess what? A couple of components connected to the wrong tracks! We call it *“looking and not looking”* in our family.

The LEDs don't show up very well on screen but there we are.

You will see I have put a couple of the PMPs on their sides. This was to make easier access to the pre-set potentiometers.



Bearing in mind the importance of labelling, I've shown photos of the inside wiring tangles with the various labels I use. I've also attached a photo of what I call *"PMP Easi-Cards"* - these are small print offs of the circuit diagrams from the MERG PMP instructions, mounted on sellotape covered cardboard, which I find an easy way to remind myself of what goes where. I'm sure we all have different ways of trying to remember how things function!

I've learned a great deal in doing this project and it's increased my confidence. Thanks to Davy, Chic and all the contributors to our Sunday afternoon Zoom sessions.

*Brendan Harris*
21st Dec 2020

Click here to watch video