CONTENTS

06

Contents



SPARK

Top Projects

Exceptional artefacts made by everyday humans

Objet 3d'art

Version two of a quite brilliant seven-segment display

Meet the Maker: Thea Flowers

Modular synth sounds of the open-source variety

Columns

Wood-turning as productive procrastination

Letters

The public want more Pico stuff. Excellent!

Kickstarting

Boost the brains of your Raspberry Pi



LENS

Pico proiects

More things to make and do with your \$4 microcontroller

How I Made: CNC plotter

Rescue broken hardware and turn it into an art vector

Interview: My Bees

How one project is monitoring urban ecology

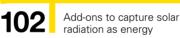
Improviser's Toolbox Aluminium foil

Make things with thin sheets of metal

Tutorial

Crochet







20



108

Who else loved the soundtrack to Sonic the Hedgehog 2?

FORGE

SoM PIO in MicroPython Get masses of data in and out of your Pico

SoM MQTT security Keep your IoT devices safe from prying eyes

SoM Laser cutter screen printing A modern twist on applying ink to surfaces

Tutorial Retro gaming Use a retro DB9 joystick with Raspberry Pi 400

Tutorial FreeCAD Curves: because bendy is trendy

Tutorial Crochet Make a woolly resistor



FIELD TEST

102 Best of Breed Solar power units Harvest the sun's rays - they're free energy!

108 Review Pimoroni Pico Explorer Loads of add-ons for your Pico, all in one board

110 Review Pinecil smart soldering iron This handheld tool gets things hot. Smartly!

112 Review Ooznest WorkBee Carve wood with computer-controlled precision

Cover Feature

RASPBERRY PI **PROJECTS** Do more with the \$4 microcontroller

Admit it: you've always wanted

your own cuddly resistor

Some of the tools and techniques shown in HackSpace Magazine are dangerous unless used with skill, experience and appropriate personal protection equipment. While we attempt to guide the reader, ultimately you are responsible for your own safety and understanding the limits of yourself and your equipment. HackSpace Magazine is intended for an adult audience and some projects may be dangerous for children. Raspberry Pi (Trading) Ltd does not accept responsibility for any injuries, damage to equipment, or costs incurred from projects, tutorials or suggestions in HackSpace Magazine are different between countries, and are always subject to change. You are responsible for understanding the requirements in your jurisdiction and ensuring that you comply with them. Some manufacturers place limits on the use of their hardware which some projects or suggestions in HackSpace Magazine may go beyond. It is your responsibility to understand the manufacturer's limits.

HackSpace **Hack**Space