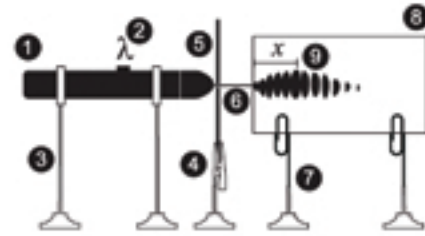


Powers of

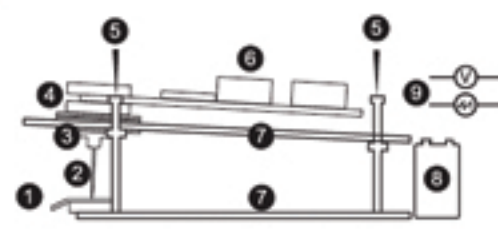
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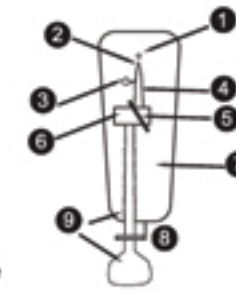
Ohio eTech Ohio Educational Technology Conference 2012



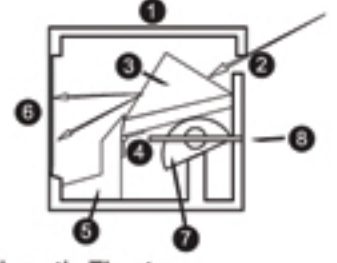
- Station 1 Duality**
- 1 Laser Pointer
 - 2 Laser Pointer Button
 - 3 Wire Mounts
 - 4 Mounted Alligator Clip
 - 5 Black Slide With a Tiny Pinhole
 - 6 Laser Light
 - 7 Mounted Paper Clips
 - 8 3'x5" White Index Card
 - 9 Diffraction Pattern



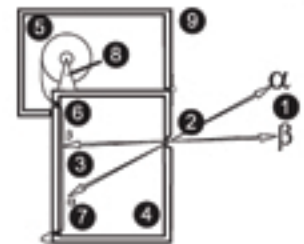
- Station 2 Scanning Tunneling Microscope**
- 1 Sensing stage
 - 2 Tunneling Needle
 - 3 Piezo-electric deformation Disk
 - 4 Magnetic Buffer Head
 - 5 Mounting Bolts
 - 6 Arduino Pre-processor Board
 - 7 Grounded Aluminum Plates
 - 8 9Volt Battery
 - 9 Processing Board, Voltmeter & Oscilloscope



- Station 3 Microscope**
- 1 pinhole
 - 2 Specimen point mount
 - 3 Point mount rotation knob
 - 4 Point mount screw base
 - 5 Point mount adjustment screw
 - 6 Focus base mount
 - 7 Microscope base
 - 8 Focus base screw arm
 - 9 Focus base screw knob



- Station 4 Prismatic Theater**
- 1 Prismatic theater box
 - 2 Light inlet
 - 3 Polished prism
 - 4 Prism mount hinge
 - 5 Prism mount base
 - 6 Rice paper screen
 - 7 Prism adjustment rocker arm
 - 8 Prism adjustment arm knob



- Station 5 Camera Obscura**
- 1 Viewing object angles
 - 2 Light inlet
 - 3 Viewing object focus
 - 4 Camera obscura housing
 - 5 Heat-sensitive doped paper
 - 6 Paper inlet slot
 - 7 Paper outlet slot
 - 8 Paper roll dispenser
 - 9 Hinged paper roll housing

The Digital Midgard

The Quantum World

Young's Quantum Experiment
[Thomas Young]
Scale: 1A
Photons
Observe Quantum Wave/Particle Duality

Scanning Tunneling Microscope
[Niels Bohr]
Scale: 1nm
Atomic Structure
Observe Carbon Atoms

The Micro World

Simple Microscope
[Antony van Leeuwenhoek]
Scale: 1µ
Single celled organisms
Observe an amoeba

Visible Light

Simple Prismatic Theater
[Isaac Newton]
Scale: 1mm
Visible Light
Observe the visible spectrum

Simple Microcomputer
[John von Neumann]
Scale: 1m
Working with Digital Information
create a processor and an LED

Simple Pinhole Camera
[Leonardo daVinci]
Scale: 1cm
Visible Structures
Observe an optically reversed image

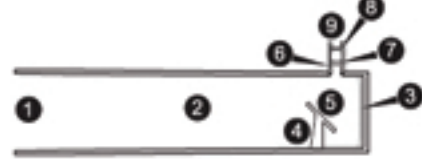
Simple LED Light Sensor
[Eric Fossum]
Scale: 100m
Sensing Light and Images
create an LED sensor array

Simple Radio
[Nikolas Tesla]
Scale: 1km
Observe and Hear Radio Waves
create a radio detector

The Universe At Large

Simple Telescope
[Galileo Galilei]
Scale: 10,000km
The Inner Solar System
observe the craters of the moon

Modern Telescope
[Edwin Hubble]
Scale: 1,00,000km
The Outer Solar System
observe the moons of Jupiter



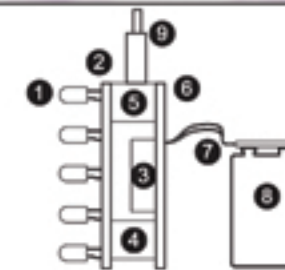
- Station 10 Modern Reflective Telescope**
- 1 Light Opening
 - 2 Telescope Tube (focal length)
 - 3 Concave Objective Lens
 - 4 Reflective Mirror Base
 - 5 Light Correcting Lens
 - 6 Focus Tube
 - 7 Light Amplifying Lens
 - 8 Corrective Lens
 - 9 Eyepiece Assembly



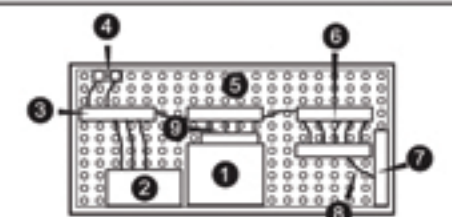
- Station 9 Simple Refractive Telescope**
- 1 Objective Lens
 - 2 Light Shield
 - 3 Telescope Tube (focal length)
 - 4 Interior Support
 - 5 Focus Tube
 - 6 Eyepiece



- Station 8 Simple Radio Set**
- 1 16 Fl Oz Plastic Bottle
 - 2 Insulated Copper Wire
 - 3 Exposed Copper Wire "Taps"
 - 4 Standard Telephone Handset
 - 5 Standard Handset Cord
 - 6 Germanium Diode
 - 7 Exposed Handset Wires
 - 8 Alligator Clip to Ground
 - 9 Alligator Clip to Antenna



- Station 7 LED Light Sensor**
- 1 25 LED Arrays
 - 2 Connecting Breadboard
 - 3 Voltage Inverter Chip
 - 4 Electrical Resistance Sensor (RGB)
 - 5 USB Hub/Port to PC
 - 6 Arduino Circuit Board
 - 7 Electrical Serial Connection
 - 8 9Volt Battery
 - 9 USB Cable to PC



- Station 6 Microprocessor**
- 1 Output Bus
 - 2 Central Processor Chip
 - 3 Resistor
 - 4 LED Units
 - 5 Memory
 - 6 Transistor
 - 7 Power Chip
 - 8 Breadboard
 - 9 Connection Wire