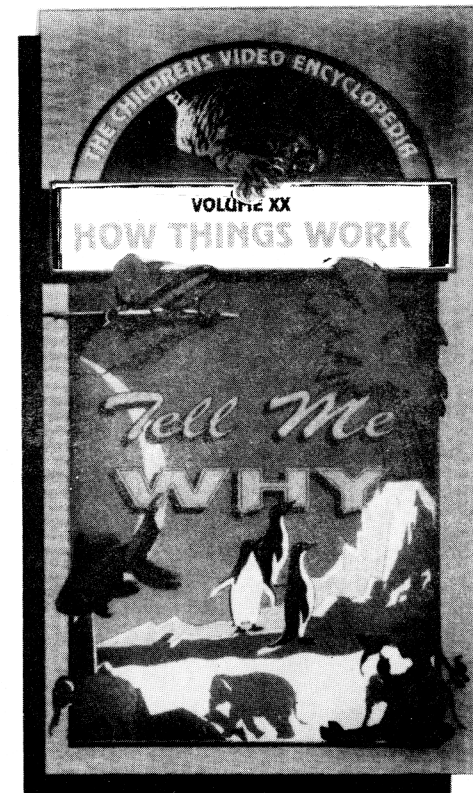


GLOSSARY

1. ACTIVATOR-to make active.
2. AMPLIFY-make larger or louder.
3. AQUALUNG-underwater breathing device using compressed air.
4. AUTOMATIC-self-acting
5. BIT-drill.
6. BROADCAST-send by radio, television, etc.
7. CAMERA-device for making photographs.
8. CARBURETOR-mechanism that mixes gasoline and air in motor.
9. CASING-covering or protective outside part.
10. COMBUSTION-burning.
11. CONDENSER-apparatus for converting gases or vapors to a liquid state.
12. CURRENT-movement of electricity.
13. DAM-barrier to obstruct water.
14. DELICATE-fine.
15. DERRICK-crane with boom pivoted on one end.
16. DEVICE-invention.
17. EARTHQUAKE-vibration of earth's surface.
18. EDIT-to cut apart and recombine.
19. ELECTRIC EYE-photoelectric cell.
20. ELECTRON-minute particle supposed to be or contain a unit of negative electricity.
21. ENGINE-machine for converting energy into mechanical work.
22. ENLARGE-make bigger.
23. EVAPORATOR-device to change liquid into a vapor.
24. FAULT-defect.
25. FOCUS-state of sharpness for image from optical device.
26. FRICTION-act or effect of rubbing together.
27. GENERATOR-device for producing electricity.
28. IMAGE-likeness.
29. IMPULSE WHEEL-one that uses merely the weight and speed of moving water to obtain energy.
30. INSTRUMENT-instrument.
31. INTAKE-point at which something is taken in.
32. MAGNETIC TAPE-thin plastic ribbon coated with a suspension of ferromagnetic iron oxide particles and used as a storage medium for magnetic recording.
33. MAGNETIZE-to acquire magnetic properties.
34. MAGNIFY-enlarge.
35. MICROPHONE-instrument for changing sound waves into changes in electric current.
36. MODULATE-alter electric current in accordance with sound waves.
37. OBJECT GLASS-made of two or more lenses and found in refracting telescopes.
38. PARALLEL-having same direction.
39. PHOSPHOROUS-solid non-metallic element present in all forms of life.
40. PHOTOELECTRIC-of or using electrical effects produced by light.
41. PISTON-part moving back and forth under pressure in engine cylinder.
42. PULLEY-wheel for guiding rope.
43. RADIO-way of transmitting sound by electromagnetic waves without wires.
44. RAMJET-jet engine in which the air is continuously compressed by being rammed into the open front end.
45. RECEIVER-device, as radio, that receives electrical signals and converts them to sound, etc.
46. RECORD-object from which sound is mechanically reproduced.
47. REFLECTING TELESCOPE-telescope that uses a mirror to gather light and has only one lens in the eyepiece.
48. REFRACT-bend
49. REFRACTING TELESCOPE-telescope that uses a lens to gather light and has a closed tube housing "object glass" through which passes the light from the object.
50. REFRIGERATOR-cabinet for keeping food cold.
51. ROTARY DRILL-a rotating drill used for boring holes in rock.
52. SCANNING BEAM-beam of light or electrons that is used to transmit or reproduce a picture.
53. SCREEN-surface upon which pictures are viewed.
54. SEISMOGRAPH-instrument for recording earthquakes.
55. SHAFT-long, slender rod.
56. SLAB-broad flat piece of material.
57. SOLAR CELL-a device that uses sunlight to generate electricity.
58. STATIONARY ORBIT-satellite that is always in the same place above the earth.
59. STEAM-water in form of gas or vapor.
60. SUSPEND-hang.
61. TAPE RECORDER-device for recording sound on tape.
62. TELESCOPE-optical instrument for enlarging image of distant objects.
63. TELEVISION-radio or electrical transmission of images.
64. TELSTAR 1-U.S. satellite launched July, 1962, making television transmission possible between the United States and Europe.
65. THERMOMETER-instrument for measuring temperature.
66. THERMOSTAT-device regulating temperature of heating/cooling system, etc.
67. TRANSMITTER-a device that sends out radio waves.
68. TURBINE-impulse wheel.
69. TURBOJET-jet engine that compresses air by turbine.
70. TURBOPROP-turbojet engine whose turbine shaft, thru reduction gears, drives a propeller that develops most of the thrust, with some thrust usually being added by a jet of the turbine exhaust gases.
71. VACUUM-space from which all matter has been removed.
72. VAPOR-gas
73. VIBRATE-move very rapidly to and fro.
74. WASHING MACHINE-machine for washing clothes, etc. by moving or tumbling them through suds, operated by electricity, hand, steam, etc.
75. WIND FARM-huge field of windmills.
76. WINDMILL-mill operated by wind.
77. WINDWHEEL-wind-driven wheel.

Tell Me WHY TEACHER'S GUIDE



VOLUME XX HOW THINGS WORK

SUGGESTED TEACHING STRATEGIES

1. Compare the two (2) types of telescopes - refractor and reflector. Discuss the advantages of each type.
2. Diagram the working of an electric eye. List different working mechanisms that utilize the photoelectric cell.
3. Research how magnetic tape is used to make records.
4. Research television transmissions, starting with the taping of a show, culminating with its broadcast.
5. Discuss how a seismograph works.
6. Discuss turbines and how they generate energy.
7. Compare and contrast jet engines and steam engines. Discuss the differences in their uses, emphasizing the advantages of each.
9. Research James Watt and his development of the steam engine. document the advancements and how each helped make the steam engine more efficient.
10. Diagram the working parts of a car.
11. Research the invention of the Aqualung. Discuss the advantages in using this apparatus.
12. Diagram the process of drilling for oil. Discuss the alteration necessary for off-shore drilling.

CONCEPTS AND TERMS TO LISTEN AND WATCH FOR

TELESCOPE	GENERATOR
PHOTOELECTRIC CELL	COMPRESSOR
TELSTAR I	TURBOPROP
SEISMOGRAPH	CONDENSER
IMPULSE WHEEL	AQUALUNG
THERMOMETER	REFLECTING
TURBOJET	SCANNING BEAM
PISTON	TRANSMITTER
WINDMILL	FAULT
BIT	THERMOSTAT
REFRACTING	RAMJET
MAGNETIC TAPE	STEAM ENGINE
RECEIVER	CARBURETOR
EARTHQUAKE	OIL DERRICK

QUESTIONS FOR THOUGHT, DISCUSSION AND FURTHER STUDY

1. How does a telescope work.
2. List things that utilize electric eyes or "photoelectric cells."
3. Why is magnetic tape good for use in making records?
4. How are televisions pictures transmitted?
5. What part do artificial satellites play in television broadcasts?
6. What is a geologic fault?
7. How does a seismograph measure the intensity of an earthquake?
8. How does a generator use the natural force of water to create energy in dams?
9. What is a turbine?
10. How are thermometers and thermostats alike? How are they different?
11. How does a compressor help cool machines such as refrigerators?
12. How does the law of motion apply to jet engines - "to every action there is an equal and opposite reaction?"
13. What are the three (3) types of jet engines?
14. How does a piston work?
15. How does a "double-acting engine" work?
16. Explain the "four-stroke cycle" and how it is utilized in making cars move.
17. Why are windmills not the best source of everyday energy?
18. What is an aqualung?
19. What is rotary drilling?
20. How does an activator work in a washing machine?

CAREER OPPORTUNITIES

ASTRONOMER	MECHANICAL ENGINEER
CAMERAMAN	PILOT
RESEARCHER	MECHANIC
GEOLOGIST	SOUND ENGINEER
APPLIANCE REPAIRMAN	PRODUCER
AEROSPACE ENGINEER	SEISMOLOGIST
OCEANOGRAPHER	ELECTRICIAN
ELECTRICAL ENGINEER	INVENTOR
DIRECTOR	CIVIL ENGINEER
TECHNICIAN	