Listed below are projects included in the 280-0270 Project Kit.

1) **Surprise and Fun**
   1. Light-Controlled Bird
   2. A Transistor Radio
   3. Sound Scooper
   4. American Patrol Car Siren
   5. Digital Roulette
   6. IC Organ

2) **Back to the Basics**
   7. Light Telegraph
   8. Introducing the Resistor
   9. Parallel Resistor
  10. Meet the Diode
  11. The LED -- a Special Diode
  12. The Electronic Gas Tank
  13. Capacitors in Series and Parallel
  14. Meet the Transistor
  15. Transistor as switches
  16. PNP Transistor Switch
  17. NPN Transistor Switch
  18. Delay Light
  19. Night Light
  20. Electronic Timer
21. Capital Letter Display
22. Small Letter Display
23. Number Display

3) Electronic "Building Blocks"
24. An Inverter Circuit
25. Meet the OR Gate
26. Introducing the AND Gate
27. Using the NOR Gate
28. Meet the NAND Gate
29. How a Multivibrator Works
30. A "One-Shot" Multivibrator
31. An R-S Flip Flop
32. Meet the Oscillator
33. Changing Oscillation with Capacitor
34. Changing Oscillation with Foreign Substance
35. More about Oscillator
36. A Push-Pull Oscillator
37. Low Distortion Sinewave Oscillator

4) Putting Electronics to Work
38. Strobe Light
39. CdS Controlled Oscillator
40. Frequency Shift Oscillator
41. Electronic Grandfather Clock
42. Electronic Metronome
43. Motion Detector
44. Door Alarm
45. Rapid LED Display Switching
46. Code Practice Unit
47. Twin-T Audio Oscillator
48. Current Switch
49. Shot in the Dark
50. Variable R-C Oscillator
51. Two-Tone Buzzer
52. Sawtooth Wave Oscillator
53. Astable Multivibrator
54. Monostable Multivibrator
55. Code Practice Unit
56. The Noisy Light
57. Hearing Aid Amplifier
58. Light / Sound Code Practice Unit
59. Light Controlled Burglar Alarm
60. DC-DC Converter
61. Count Down Timer
62. Transistor Frequency Doubler
63. One Transistor Full-Wave Rectifier

5) Radio Circuits
64. "Crystal Set" Radio
65. "Funny Transistor" Radio
66. Wireless Code Transmitter
67. Remote Water Level Detector
68. IC Radio
69. Morse Code Transmitter
70. AM Transmitter
71. Broadcasting Organ

6) Sonic zoo and Sound Factory

72. Two-Tone Patrol Car Siren
73. Plant Growth Stimulator
74. Electronic Woodpecker
75. Fish Caller
76. Electronic Raindrops
77. Pencil Lead Organ
78. Electronic Motorcycle
79. Machine Gun Pulse Detector
80. Electronic Siren
81. Chirping Bird
82. Electronic Cat
83. Electronic Bird
84. "Horror Movie" Sound Effect
85. Electronic Organ
86. Sound Machine I
87. Sound Machine 11
88. Multi-Tone Siren
89. Digital Rhythm
90. Two-IC Electric Organ
7) **Electronic Decision-Makers**

91. Majority Logic Gate
92. Electronic Coin Toss
93. Electronic Coin Toss 11
94. Electronic Coin Toss III
95. Even or Odd
96. Quick Draw Game
97. Close-In
98. ESP Tester
99. The Light Fantastic
100. Shooting Game
101. Marching LED's
102. Electronic Dice
103. Electronic Roulette

8) **Operational Amplifier IC Can Do Many Things**

104. Meet the VCO
105. Silicon Diode Solar Cell
106. Integrating Circuit
107. Astable Multivibrator Using OP Amplifier
108. Pulse Generator
109. Comparator
110. Experiment of Comparator
111. Comparator with Hysteresis
112. Constant Current Sources by OP Amplifier
113. Non-Inverting Adder
114. Schmitt Trigger Circuit
115. Delayed Timer
116. Pulse Frequency Doubler
117. Touch Switch Using OP Amplifier
118. Early Bird
119. DC-DC Converter by OP Amplifier
120. Inverting Amplifier
121. Non-Inverting Amplifier
122. Differential Amplifier
123. Differential Output Amplifier
124. Power Amplifier Using OP Amplifier
125. Balanced Transformerless Amplifier
126. Three-Stage Differential Amplifier
127. VCO Using OP Amplifier
128. Voltage Controlled Amplifier
129. V-F Converter
130. F-V Converter
131. White Noise Generator
132. Sweep Generator
133. Multiple-Function IC Project
134. Sound Alarm
135. Photo Organ
136. Vibrato Organ

9) Introducing the Power Amplifier IC

137. IC Power Amplifier
138. IC Power Amplifier 11
139. Oscillator Using Power Amplifier IC
140. CdS Controlled IC Oscillator
141. Phase Shift Oscillator
142. Intercom
143. A Water Service Pipe Sound
144. Electronic Klaxon
145. Wide Range Audio Frequency Oscillator

10) A Trip to Digital Land
146. Switching Circuit
147. RTL Inverter
148. RTL Buffer
149. RTL OR Gate
150. RTL AND Gate
151. Transistor OR Gate
152. Transistor AND Gate
153. Transistor XOR Gate
154. Special NAND Gate
155. DTL OR Gate
156. DTL AND Gate
157. DTL NOR Gate
158. DTL NAND Gate
159. DTL Exclusive OR Gate
160. C-MOS Inverter
161. C-MOS Buffer
162. C-MOS OR Gate
163. C-MOS AND Gate
164. C-MOS 3-Input AND Gate
165. C-MOS NOR Gate
166. C-MOS 4-Input NOR Gate
167. C-MOS 4-Input NOR Gate 11
168. DeMorgan's Theorem
169. Experiment of Threshold Voltage
170. NAND/NOR and Transistor Switch

11) More Adventures in Digital Land
171. C-MOS XOR Gate
172. C-MOS NAND Enable Circuit
173. C-MOS AND Enable Circuit
174. C-MOS OR Enable Circuit
175. A One-Shot NAND Gate
176. C-MOS Line Selector
177. C-MOS Data Selector
178. C-MOS R-S Flip Flop
179. C-MOS R-S Flip Flop 11
180. Set/Reset Buzzer
181. Set/Reset Buzzer 11
182. Set/Reset Buzzer III
183. Transistorized Toggle Flip Flop
184. NAND Toggle Flip Flop
185. J-K Toggle Flip Flop
186. C-MOS Astable Multivibrator
187. C-MOS J-K Flip Flop
188. C-MOS D Flip Flop
189. C-MOS D Flip Flop 11
<table>
<thead>
<tr>
<th>190.</th>
<th>R-S-T Flip Flop</th>
</tr>
</thead>
<tbody>
<tr>
<td>191.</td>
<td>T Type Flip Flop</td>
</tr>
<tr>
<td>192.</td>
<td>C-MOS Latch</td>
</tr>
<tr>
<td>193.</td>
<td>Shift Register</td>
</tr>
<tr>
<td>194.</td>
<td>Touch Switch Using NAND Gate</td>
</tr>
<tr>
<td>195.</td>
<td>Half Adder</td>
</tr>
<tr>
<td>196.</td>
<td>D-Latch</td>
</tr>
<tr>
<td>197.</td>
<td>2-Line to 4-Line Decoder</td>
</tr>
<tr>
<td>198.</td>
<td>Multiplier</td>
</tr>
<tr>
<td>199.</td>
<td>Dual 2-input Multiplexer</td>
</tr>
<tr>
<td>200.</td>
<td>Two-Stage Frequency Divider</td>
</tr>
</tbody>
</table>

**12) Circuits That Count**

<table>
<thead>
<tr>
<th>201.</th>
<th>Basic Counter</th>
</tr>
</thead>
<tbody>
<tr>
<td>202.</td>
<td>Synchronous Counter</td>
</tr>
<tr>
<td>203.</td>
<td>Asynchronous Counter</td>
</tr>
<tr>
<td>204.</td>
<td>Counter with Line Decoder</td>
</tr>
<tr>
<td>205.</td>
<td>Divide by 4 Counter</td>
</tr>
<tr>
<td>206.</td>
<td>Divide by 4 Counter with Line Decoder</td>
</tr>
<tr>
<td>207.</td>
<td>How a Line Decoder Works</td>
</tr>
<tr>
<td>208.</td>
<td>Multiple Counter</td>
</tr>
<tr>
<td>209.</td>
<td>Binary Counter with Display</td>
</tr>
<tr>
<td>210.</td>
<td>Divide by 3 Counter with Display</td>
</tr>
<tr>
<td>211.</td>
<td>Divide by 4 Counter with Display</td>
</tr>
<tr>
<td>212.</td>
<td>Up / Down Counter</td>
</tr>
<tr>
<td>213.</td>
<td>Down Counter</td>
</tr>
<tr>
<td>214.</td>
<td>Decade Down Counter</td>
</tr>
</tbody>
</table>
13) Getting Closer to Computers

226. BCD to 7-Segment Decoder
227. Full Adder
228. Decimal to Binary Encoder
229. Binary to BCD
230. Octal to BCD
231. Hexadecimal to BCD
232. 3-Bit Shift Register

14) Amusement in Digital Land

233. VCO by NOR Gate
234. Pulse-Delayed Circuit
235. NAND Gate Tone Generator
236. Transistor Timer
237. Noise-Signal Discriminator
238. Pulse Stretcher
239. Bi-directional Buffer
240. Various Inverters
241. Electronic Switch
242. Tone Burst Generator
243. Digital Timer
244. Digital Timer 11
245. Ten Count Buzzer
246. Press First
247. Target Range
248. Catch the Eight
249. SOS Alert
250. Wheel of Fortune
251. Leapin' LED's

15) **Shake hands of Analog and Digital**
252. Pulse Number Modulation Light Dimmer
253. Pulse Width Modulation Light Dimmer
254. DC-DC Converter Using the C-MOS Oscillator
255. Absolute Value Amplifier
256. Window Comparator
257. Digital Light Dimmer
258. A-D Converter
259. D-A Converter
260. Photometer with Digital Display
16) **Surprise and Fun Revisited**

261. Experiment of Electromagnetic Induction
262. Electronic Candle
263. Constant Current Circuit
264. A Phony Counter
265. Alphabet Flasher
266. Winking LED's
267. Winking LED's 11
268. Delayed Timer 11
269. Voice Level Meter
270. Crossing Signal
271. Octave Generator
272. Buzzin' LED
273. Son of Buzzin' LED
274. Sound out Timer
275. Sound Stop
276. Big Mouth
277. Light or Sound
278. Be Your Own Multivibrator
279. Anticipation
280. Set/Reset Match

17) **Testing and Measuring Circuits**

281. Circuit Continuity Checker
282. Acoustic Ohmmeter
283. Audio Signal Tracer
284. Audio Signal Generator
285. Metal Detector
286. Rain Detector
287. Burglar Alarm
288. Temperature-Sensitive Audio Amplifier
289. Water Level Detector
290. Battery Checker
291. Conductivity Tester
292. IC Oscillator / Component Tester
293. Voltage Drop Alarm
294. Transistor Checker
295. Current Shutdown Circuit
296. Logic Checker
297. Logic Checker 11
298. Three-Step Water Level Indicator
299. Temperature Alarm
300. Function Generator

(PJV 03/23/2000)