

ILLUSTRATED

CORGI

**AN ENCYCLOPEDIA OF THE SHAPE
OF THINGS TO COME IN TECHNOLOGY,
SCIENCE MEDICINE AND LIFE**

FUTURE FACTS

STEPHEN ROSEN

**"A GOLD MINE OF
INFORMATION THAT WOULD
BE IMPOSSIBLE TO FIND
IN ONE PLACE ELSEWHERE"**

— ISAAC ASIMOV —

Contents

Foreword

1

1. Health and Medicine

5

Artificial Life, 7 Growing New Limbs, 10 Human Cells Are Harvested from Mice, 13 Airborne Intensive Care for Infants, 15 Synthetic Blood, 17 Blood Test for Gonorrhea, 19 Weapons Against Gonorrhea, 20 Belt Gives Long-Distance Electrocardiogram, 22 Nuclear-Powered Artificial Heart, 24 Heartbeat Transmission by Telephone, 27 Artificial Pancreas for Diabetics, 29 Diagnosis by Computer, 30 "Pill" Transmits Deep Body Temperature, 32 The Hoverbed, 34 Medical Magnetism, 35 Skinlike Membrane Protects Burns and Wounds, 38 Time-Release Drugs on Target, 39 "Smart" Spheres Attack Sick Cells, 42 New Teeth with Carbon-Root Implants, 43 Lasers Fight Tooth Decay, 45 Lightweight Cast for Broken Bones, 45 New Materials for Bone Repair, 48 Electropharmacology and Obesity Control, 49 Electric Pain Relief, 50 "Electric Aspirin," 52 Common Cold "Cure," 53 Vaccines for Future Viruses, 55 Our Immune System, 56 Vaccine for Meningitis, 58 Synthetic Prostaglandins to Treat Many Illnesses, 60 Blocking Viral Cancer, 62 Cancer Cure on Your Breakfast Table? 63 Blood Test for Cancer, 65 The Thymus Gland and Aging, 66 Enzyme Inhibitor May Retard Aging, 68 A Step Toward Suspended Animation? 69 Measuring Prolonged Life, 72

2. Power and Energy

75

Solar Power from Satellites, 77 Hydrogen from Solar Energy, 80 Chemical Light, 81 Cooking by Sunlight, 82 Solar House, 84 Solar Heat Pump, 87 Energy Storage, 88 Low-Temperature Heat Engine, 90 Superflywheel for Electric Automobiles, 92 Liquid-Hydrogen—Fuel of the Future, 95 Deep-Freeze Cables Transmit Electricity, 98 High-Temperature Gas Generates Electricity, 100 Laser Triggers Thermonuclear Fusion, 103 Nuclear-Powered Refrigerator, 107 Water and Sodium Make Power, 108 Bettering the Battery, 109 Large-Scale Fuel Cells, 111 Power from Garbage, 113 Improved Coal Gasification, 114 Pollution-Free Energy from Offshore Winds, 117 Air Reservoirs, 120 Geothermal Power, 122 Light Conveys Power, 125 Hidden Energy, 126

3. Foods and Crops

129

Quick-Ripening Produce, 131 Making Crops Fertile Year Round, 133 Sugarcane Ripener, 135 Factory Production of Starch and Sugar, 136 Sugar Suds, 138 Natural Sweet Hearts, 139 Food Additives Just Passing Through, 141 Radiation Preserves and Sterilizes Food, 143 Deep-Sea Food Storage, 144 Food from Oil, 145 Protein from Wastes, 149 Soluble Protein for Liquids, 151 Peanuts Fortify Foods, 152 Fish Crackers, 154

CONTENTS

Larger Lobsters Sooner, 155 Embryo Transplants in Cattle, 156 The Cool-Heat Countertop Range, 157 Disposable Beverage Heater, 159 Can Chills Beverage, 160 Fields Weed Fields, 162 Trees from the Air, 163 Supertrees, 165

4. Transportation 167

New York to Los Angeles in 21 Minutes by Subway, 169 Moving Sidewalks, 171 Urban Transit on Demand, 172 Quiet Short-Haul Aircraft, 174 Airborne Trolleys, 176 Flying Trains, 178 Hybrid Airship, 180 Giant Flying Freighter, 181 Satellites Control Air Traffic, 183 "Invisible" Planes, 185 The Vapor Turbine Car, 186 The Stirling Engine, 188 Automobiles Run on Hydrogen, 189 Light "Pipes" Replace Auto Wires, 191 Car Radar and Sonar, 193 Deceleration Warning Lights, 195 Computer-Controlled Traffic, 197 Impact Absorbers for Highway Safety, 199 Vibratory Locomotion, 200 Man-Powered Aircraft, 202 Triangular-Wheeled Vehicles, 204 Hydrofoil Boats, 206

5. Behavior and Society 211

Learning and Unlearning Illnesses, 213 Eyes May Reveal Learning Ability, 215 Expansion of Human Memory, 216 Dreamless Sleep Aids Memory, 217 Speech Compression for Speed Listening, 219 Chemical Transfer of Learning, 220 Behavior Cycles, 222 Change Hurts, 224 Midlife Crisis, 226 Ripples of Friendship Circles, 228 Eyes Foretell, 229 Is Demography Destiny? 231 Altering the Past, Present, and Future, 235 Measurement of Romantic Love, 238 Chemical Male Contraception, 239 Dietary Control of Aggression, 240 Mercy Killing, 242 Confirmation of Electroencephalographic Silence, 244 The Metric System's Coming—Sooner or "Liter," 246 Calendar Reform, 247 Adolescent Homicidal Behavior, 250 Nonlethal Weapons, 252 Computer Crime, 254 Computers and the Neighborhood Cop, 256 Explosive Detector, 258 Chemical Antagonists Treat Addicts, 259 Drug May Reverse Intoxication, 260 The Body's Own Sedative, 261 New Rural Society, 264

6. Construction and Materials 267

Melting Rock, 269 Rock Shattering with Accelerated Electrons, 271 Space-Age Explosive, 273 Noise Silencer, 275 Heated Glass Sandwich, 276 Man-Made Leather, 278 Plastic Paper, 279 Hollow Fibers, 280 Pseudo-Silk, 282 Paper Honeycomb—A Metal Substitute? 283 Ultrasonic Sewing, 284 Fabric Overhead? 286 Multiple Helicopter Lift System, 288 Submarine Home, 291 Floating Island, 292 Instant Modular Homes, 294 Building with Lasers, 295 A Mobile Bridge, 297 Old Tires into Highways, 299 Roadbeds Made of Discarded Glass, 300 Plastic Cars, 301 Light Copies Sunlight, 302

7. Communication and Information 305

The Discovery of the Future, 307 Encyclopedia of the Future, 308 New and Future Words, 310 Chimp Language, 311 College Degrees Offered by Corporations, 314 Failure Teaches, 315 College Degrees Through the Public Library, 316 Cooperative Computers, 318 Data Privacy Through Cryptology, 321 Voice Scrambler for Privacy, 323 Sounding the

CONTENTS

Alarm, 324 Real Time Diagnosis and Treatment, 326 Rapid Image Transmission by "Laser Writing," 329 Portable Telephones, 331 Talking Beams of Light, 332 A Quarter-Million Phone Conversations in a "Pipe," 334 A Stop-Action Video Telephone, 335 Telecommunications by "Meson" Beams, 337 Electronic Newsrooms and Video Typewriters, 339 Superfast Printing, 341 Dial a Computer, 343 Drawings by Computer, 344 Superspeed Computers, 347 Magnetic Bubble Storage, 349 Human- and Machine-Readable Information Retrieval System, 351 Spoken Print, Printed Speech, 353 System Comprehends, 355 Synchronous Satellites Provide Global Communications, 357 Nationwide Data-Communication Network, 360

8. Business and Work 363

To Improve Productivity, 365 Eye Movements Command Machines, 367 Qwerty Versus Aoeui, 370 Touch-Tone Shopping? 372 Future Retailing, 374 Forecast Storage and Retrieval, 375 Speed Bagging at Supermarkets, 378 Post Office Data Management, 379 Fast Mail Sorting, 380 File Management, 381 Conveyor Belt Banking, 383 Fraud-Proof Documents, 386 Computers Prevent Mine Disasters, 387 Light Pulse Burglar Alarm, 389 Intruder Tracking, 390 Ultrasonic Dishwashing, 391 Life-Cycle Insurance, 392 Comprehensive Insurance, 393 Market Limits and Prices, 395 Flexible Working Hours, 397 Nuclear Wristwatch, 400 Employee Benefits and Portable Pensions, 401

9. Play and Pastime 403

Mini-Tractor Hauls Skiers, 405 Ski Spurs, 406 Embraceable Backpack, 407 Personal Underwater Propulsion, 409 Inflatable Suspenders, 411 New Flames, 413 Recreation on Mt. Trashmore, 414 Architectural Mobile Homes, 416 Personal Space, 419 Sorting Airport Baggage by Voice Command, 420 Disposable Book on One Page, 423 Royalties for Artists, 425 Scoring on TV, 426 Balloon Brings TV to Emerging Nations, 428 A Library of the World's Sculpture in 3-D, 430 Three-Dimensional TV, 431 Three-Dimensional Movies by Holography, 433 Wall-Size Flat Panel TV Screen, 437 Video Cassettes, 438 Remote Cassette Vendors, 440 Tiny TV Camera, 442 Personalized Vacations, 444 Computers Teach Fun and Games, 446 Instant Information, 449 Slowing Down Live Action, 451 A "People Washer" Egg, 453 Longevity Quotient, 454

10. Environment 457

Sonic-Boom Softener, 459 Space-Garbage Collector, 461 Solar Flare Warning, 463 Modifying Weather and Climate, 466 Turning the Lighting Off, 467 Static Electricity Clears the Air, 469 Forecasting Quakes, 472 Air Monitoring Analysis and Prediction, 473 Algae "Polish" Water and Make Paper, 474 Clean Cars, 476 Ozone Purifies Water Safely and Inexpensively, 478 Deodorizing Olfactory Offenders, 481 Electric Toilet, 483 Gelling and Dispersing Oil Spills, 484 Magnetic Fingerprints Trace Oil Polluters, 486 Oil Recovery, 488 Garlic Versus Mosquitoes, 490 Zoo Animals Provide Early Warning System, 491 Hormone Sprays Disrupt Insect Life Cycles, 492 An Ultrasonic Rat Contraceptive? 494 Bad Blood Between Bats, 495 Birth Control for Pets, 496 Ceramics from Waste, 498

CONTENTS

Beaches from Bottles, 500 Acid Digestion of Nuclear Wastes, 501 Disap-
pearing Plastic, 503 Litter Gulper Cleans Up Roadsides, 505 Waterweed
Harvester, 507 Satellite to Monitor Oceans from Space, 508 Fresh Water
from Icebergs, 510 Putting Smoke Rings to Work, 511 Space-Age Sails
to Fight Forest Fires, 513

Afterword	515
Acknowledgments	521
Index	523