

HEALTH

SCIENCE & MEDICINE

Newton doctor invented LIFESAVING DEVICES

At his research laboratory at Beth Israel Hospital in Boston, longtime Newton resident Dr. Paul Zoll (1911-1999) developed several first-in-the-world devices that were the ancestors of today's basic survival equipment that prevent cardiac arrest and revive heart attack victims.

The descendants of Zoll's discoveries surround us. His fingerprints cover their surface.

Zoll was the first in the world to sequentially stimulate-pace a stilled heart and first to terminate ventricular fibrillation with electric shock applied to the surface of the chest. Zoll was the first in the world to develop sentinel clinical alarmed cardiac rhythm monitors to alert hospital personnel of life-threatening patient arrhythmias. These monitors basically eliminated the phenomenon of "Found Dead in Bed" by doctors and nurses on morning hospital rounds.

Zoll was the second in the world to implant his version of a long-term permanent pacemaker in an adult and the first to do so in a child. Zoll developed many other lesser approaches to improve the quality and prolongation of life. All of Zoll's machines were developed in collaboration with biomedical engineer Alan Belgard and all were manufactured at Belgard's Electrodyne Company. The Electrodyne brand pacemaker, monitor and defibrillator were the core instruments in the first coronary care unit in the U.S.

In the field of medical technology, external devices are commonly shrunk, miniaturized, become portable and are even internalized. Zoll developed an internal pacemaker, supported the concept of an internal defibrillator, and his algorithms for detecting arrhythmias were greatly enhanced by others and incorporated within internal devices.

There are a number of reasons why Zoll succeeded when other investigators failed. One of

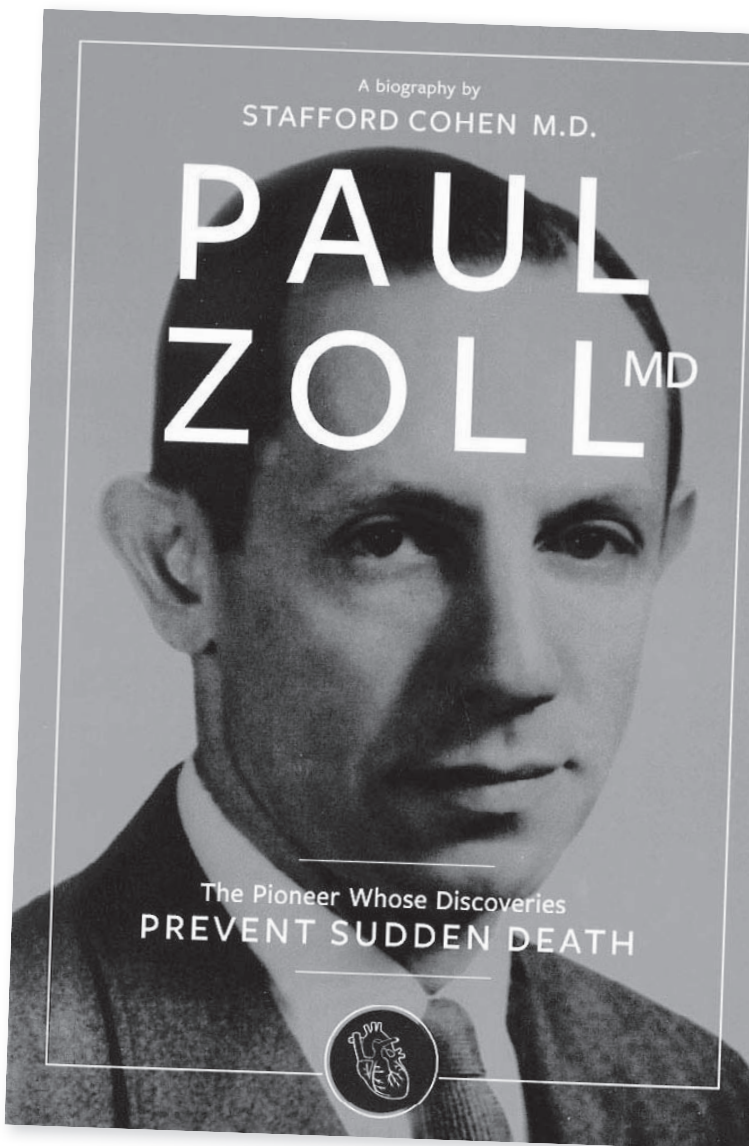


DR. STAFFORD I. COHEN

Zoll's significant advantages was his career-long practice of devoting half his time to patient care and half his time to research. He was painfully aware of his patients unresolved life-threatening heart arrhythmias and tried to find ways to prevent them through his research. So, he shuttled from bedside to lab bench and back. He judged his successes in terms of restoring quality of life and longevity to his patients and by extension to a worldwide population. His discoveries created several paradigm shifts in patient care.

Desperate patients volunteered for Zoll's untried methods or those in progress. Among the fortunate were a man from Boston who was discharged home from Beth Israel Hospital after being the first in the world to have a high voltage chest shock that stopped his irregular heart rhythm and a woman from suburban Boston who was the first in the world with a pacemaker to give birth. At Children's Hospital Boston, an 8-year-old from West Virginia was the first child in the world to receive a fully contained "permanent" pacemaker under the direction of Zoll and a collaborating Beth Israel -Children's Hospital surgical team. Then there was the itinerant British physician who was sent to Zoll from remote western Canada to have a compassionate care pacemaker. He became the second adult in the world to receive a fully contained "permanent" pacemaker.

Prevention of lethal heart rhythms has been a long-standing goal of organized medicine. In spite of lifestyle modifications, medical management of cardiac



Imagine a death each second and a half. The residents of our area communities are not immune — young and old with congenital, familial or acquired heart disease are at risk of being cut down by the Grim Reaper's scythe.

risk factors and avoidance of harmful agents, sudden deaths from fatal heart rhythms occur 1,000 times each day in the United States.

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Cardiac arrest is the generic term that results in arrhythmic sudden death. There are two forms of cardiac

arrest that prevent the heart from sustaining its dynamic pumping action that generates blood flow throughout the body. Asystole occurs when there isn't an electrical prompt to signal the main pumping chambers to beat, and ventricular fibrillation occurs when continuous chaotic electrical activity disables the main chambers from beating.

Survival from either form of cardiac arrest requires immediate action by a first responder. The American Heart Association, American

Red Cross, and local health agencies advocate a five-step "Chain of Survival" emergency procedure that usually starts with bystander recognition of a cardiac arrest that prompts an immediate call to 911 and ends with appropriate treatment at a hospital. The intervening steps might require initial rescue attempts by lay or professional bystanders trained in basic life support, a high-energy electric shock to the victim's chest from an Automated External Defibrillator (AED), rate accelerant medication or electrical pacing to jump start a heart that is able, but does not beat. Even with resuscitative efforts in place, the chance for survival decreases by 10 percent for each minute that cardiac arrest persists.

Today, we should all become familiar with the symptoms of a coronary heart attack and become certified in basic life support. Contact your local affiliate of the American Heart Association, American Red Cross or local public health facility to find classes and get additional information. Some day you might find yourself in a position to be a rescuer or in the unfortunate position of having a cardiac arrest when you would want a trained rescuer nearby.

Zoll, who spent his entire career at Beth Israel Hospital-Beth Israel Deaconess Medical Center, is today considered the father of Modern Electrocardiac Therapy. In 1973 he received the Albert Lasker award in clinical research - America's equivalent of the Nobel Prize.

—Stafford Cohen, M.D., a retired cardiologist, is a longtime resident of Newton and author of the recently released book "Paul Zoll MD; The Pioneer Whose Discoveries Prevent Sudden Death." For more about the author, visit staffordcohenmd.com.

CREATORS SYNDICATE

THE NEWSDAY CROSSWORD

Edited by Stanley Newman (www.StanXwords.com)
HOLIDAY QUINTET: From five familiar tunes
 by S.N.

- | | | |
|--|---|------------------------------------|
| ACROSS | 77 Basker's goal | 10 Protective suit |
| 1 Stinging remarks | 79 Major accumulations | 11 Deep faith |
| 6 Birth of a notion | 82 March parade VIP | 12 A single occasion |
| 10 Each, informally | 86 Plaster backing | 13 Links org. |
| 13 Zodiac symbol | 88 Dedicated verses | 14 Cinema-snack brand |
| 19 With 21 Across, bit of a fried side | 90 Letters after © at the end of <i>Shrek</i> | 15 College math class |
| 20 Telltale sign | 91 Solitary | 16 Gallic girlfriend |
| 21 See 19 Across | 92 Line from "Jingle Bells" | 17 Expect back |
| 22 Appointed | 99 On-demand planes | 18 Upper hand |
| 23 Line from "Rockin' Around the Christmas Tree" | 100 Trio on older phones | 24 Scarlett O'Hara portrayer |
| 27 Decide is best | 101 Critical cry | 25 Hoops great Shaq |
| 28 Marginal jotting | 102 Take to court | 26 "Bolero" composer |
| 29 Assent (to) | 103 Watch the grandchildren | 30 Diner menu section |
| 30 USMC one-striper | 104 Hunter's quarry | 31 Astound |
| 33 Initiation ceremony | 106 Criticizes | 32 Genetic copy |
| 34 Intensely | 107 Jargon suffix | 34 Country retreat |
| 35 Actress Mendes | 108 Political pamphlets | 35 Blaze of glory |
| 36 Purely | 112 Brake part | 38 Julia Louis-Dreyfus sitcom |
| 37 Coming-of- film | 113 Tourist destinations | 39 Sundial numeral |
| 38 By means of | 115 Line from "Do You Hear What I Hear?" | 40 Part of TGIF |
| 39 Household tools before refrigerators | 121 Be temporarily | 41 Alexander the artist |
| 44 Line from "It's Beginning to Look a Lot Like Christmas" | 122 Athletes with agents | 42 Norwegian coins |
| 49 Voicemail sound | 123 Focus of physics | 43 Reliable |
| 50 Long fish | 124 Drive away | 45 Close by |
| 51 <i>Carmen</i> solo | 125 Microsoft's calling company | 46 Lament |
| 52 Plumlike fruit | 126 Schoolbook | 47 Woodland goat-man |
| 53 Fields of knowledge | 127 "Take it!" | 48 Authored |
| 55 Painting technique | 128 Common infomercial hour | 54 Commandments verb |
| 57 Aunt, in Argentina | DOWN | 55 Ending for opal |
| 60 Genetic ID | 1 Feathery scarf | 56 Telltale sign |
| 61 Massive mammal | 2 Arbor, MI | 58 Author Dinesen |
| 63 Ancient legend | 3 Disposed (of) | 59 Needs a rubdown |
| 65 Diatribe | 4 Gift-box decorations | 62 Birth of a notion |
| 67 Line from "We Need a Little Christmas" | 5 Disparage | 64 Typical Woodstock attendee |
| 73 New Orleans cuisine | 6 13 Down platform | 66 Sound of leaves |
| 74 "Deck the Halls," e.g. | 7 Murphy of movies | 67 Longest-serving current Justice |
| 75 Snoops (around) | 8 Ultimate cause | 68 Versace rival |
| 76 It first ran <i>Breaking Bad</i> | 9 What a wife may be called | 69 Honey source |
| | | 70 Cowboy, frequently |
| | | 71 <i>Marat/Sade</i> playwright |

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18						
19						20				21				22									
23						24				25				26									
						27				28				29									
30	31	32							34					35									
36									38					39		40	41	42	43				
44									46					47	48								
49									50					51					52				
53									54					56		57	58	59	60				
									61					63		64		65	66				
67	68	69							70	71				72									
73									74					75									
76									77	78	79			80	81			82	83	84	85		
86									87					89					90			91	
92									93	94				95					96	97	98		
99														100					101			102	
									103					104	105				106			107	
108	109	110	111						112					113							114		
115									116					117							118	119	120
121									122					123						124			
125									126					127						128			

- | | | |
|-------------------------------------|-------------------------------------|--------------------------------------|
| 72 Phone-bk. listings | 94 Live and breathe | 110 ABA member |
| 78 Pitched superbly against | 95 Dueling swords | 111 Bloke |
| 80 Atlanta school | 96 Jazz-playing event | 112 Kingly address |
| 81 Tennis officials | 97 New frat brothers, perhaps | 113 Place to build on |
| 83 Self-possession | 98 Obsolescent skill | 114 Misrepresent |
| 84 Beef in some burgers | 104 Showy flower | 116 Well-put |
| 85 Goggle sound | 105 Sweller | 117 <i>A Christmas Carol</i> cry |
| 87 In great demand | 106 Attention to detail | 118 Facebook milestone of 2012 |
| 89 Requirements | 108 "Jabberwocky" starter | 119 Herbal drink |
| 93 Romanian tennis star of the '70s | 109 "Here's looking at you" speaker | 120 Tree in front of the White House |

SOLUTION TO LAST SUNDAY'S PUZZLE

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Long before he invented the telegraph, Samuel MORSE (65 Across) was an eminent portrait painter, whose subjects included John Adams and Lafayette. Before becoming Jimmy Carter's first Secretary of State, Cyrus VANCE (90 Across) had been Secretary of the Army from 1962-1964. Specifically, Medicare PART C (25 Down) allows private companies to offer supplemental health plans.

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Reach Stan Newman at P.O. Box 69, Massapequa Park, NY 11762, or at www.StanXwords.com