

# MEDICINE

## TRAUMA

### Everything Was Not Enough

After five minutes, a brain deprived of blood-transported oxygen suffers irreversible and often fatal damage. Thus the doctors who tried desperately last week to save the life of Robert F. Kennedy were faced with overwhelmingly negative odds from the moment the Senator was wheeled, unconscious, from an ambulance into the city's Central Receiving Hospital.

He had lost blood during the 23 minutes he lay in the pantry hallway at the Ambassador Hotel. During the four-minute ride to Central Receiving, Kennedy continued to bleed heavily, and though the attendant was able to give him oxygen, he could do nothing about his failing heartbeat. At the hospital, General Practitioner V. Faustin Bazilauskas and Surgeon Albert Holt found Kennedy *in extremis*, his blood pressure "zero over zero," his heartbeat almost imperceptible. "Bob! Bob! Bob!" Bazilauskas shouted, slapping his face repeatedly. There was no response.

Central Receiving doctors hooked Kennedy up to a respirator and an external-cardiac-massage machine. Bazilauskas gave him oxygen and an injection of Adrenalin to stimulate his heart, and Holt started a transfusion. Kennedy's heart began pumping. With a respirator fitted to his face, he was rushed to Good Samaritan Hospital, where a team of doctors headed by Neurosurgeon Henry Cuneo of the University of Southern California School of Medicine scrubbed and made ready. Cuneo, who was assisted by fellow Neurosurgeons Nat Downs Reid of U.S.C. and U.C.L.A.'s Maxwell Andler Jr., had performed hundreds of brain operations at Good Samaritan.

**Lethal Fragments.** The hospital's doctors had already performed a tracheotomy making an entrance in his throat for a tube leading to a positive-pressure machine that was pumping air in and out of his lungs. Electrodes from an electrocardiograph were taped to the Senator's chest and extremities in order to monitor his heart. X rays of his head and chest were taken. He had been receiving whole-blood transfusions ever since he had arrived.

Examining Kennedy and the X rays, Cuneo found that two bullets had entered his body. One had penetrated his right armpit, then burrowed upward through fat and muscle, lodging just under the skin of his neck, two centimeters from his spine. The other had penetrated Kennedy's head just behind his right ear (see chart).

His heart was still beating, a little fast, a little weak. His blood pressure had been dangerously high before the tracheotomy. It stabilized near normal after the throat tube relieved pressure caused by blood and mucus in the tra-

chea. "The heart started to stabilize too, so we could operate," Cuneo later told TIME Correspondent Tim Tyler. Ethel Kennedy had been there all the while, standing in a different section of the room. "I told her we were taking X rays, that her husband was extremely critical."

Then came the trip to the ninth-floor operating room. Anesthesiologist Earle C. Skinner saw to it that the positive-pressure machine, the EKG monitor and the transfusions kept going during the transfer. There was such a crowd in the fifth-floor hall—relatives, aides, hospital personnel—that Kennedy could not be wheeled to the main elevator. Instead, he had to be wheeled to an elevator that did not go all the way up and be transferred to the main elevator at another floor.

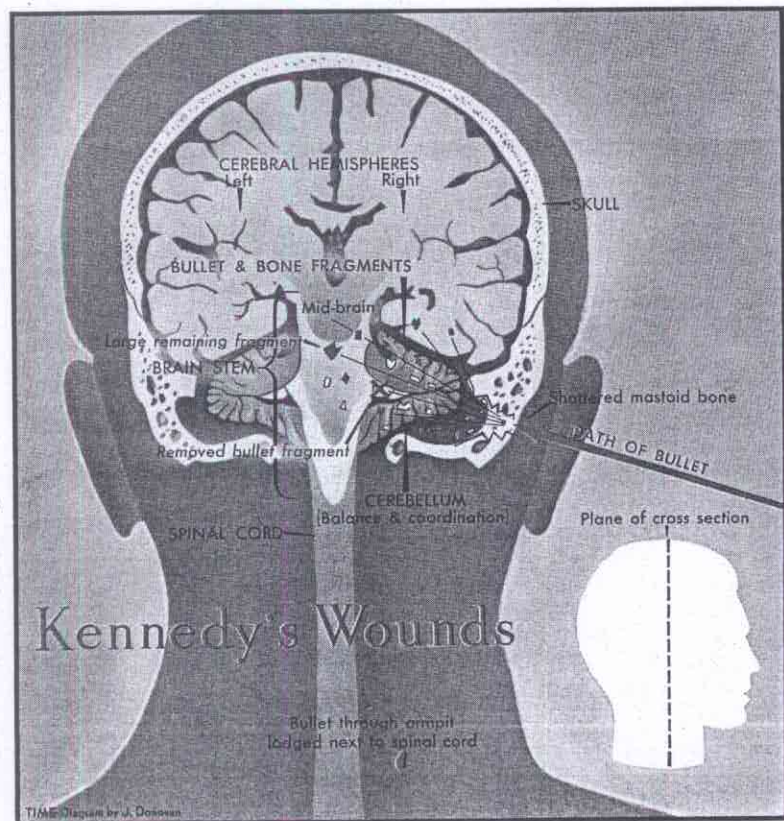
Disregarding the relatively harmless bullet in the neck, the surgeons turned their attention to uncovering the damage to Kennedy's brain. The head was shaved. Overlying skin and muscle were then cut and laid back. An air-powered drill bored through the skull, and a segment of bone was removed. Then, while Reid helped control bleeding, Cuneo probed the wound. Softened and bruised brain tissue, bone fragments and clotted blood were removed by suction.

"If the bullet had hit one centimeter

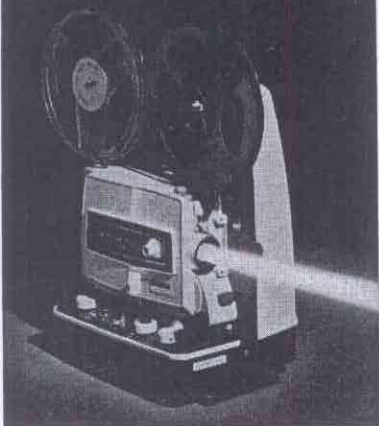
to the rear, the Senator would have been in fairly good condition," Cuneo explained curtly. "But it hit the mastoid, which is a spongy, honeycomb bone. Behind that is the thickest part of your head. That's solid. The little bullet would have just bounced off. But hitting the mastoid, it sent bone fragments shooting all over the Senator's brain. The bone fragments are the worst part, not the bullet fragments. The bullet is pretty sterile from the heat, and once the fragments are in the brain, they don't do any more damage. But the bone fragments are sharp and dirty, medically speaking.

"Both types of fragments went all through the right occipital lobe. There were clots, swelling of the brain in general, laceration of blood vessels. I removed multiple bullet and multiple bone fragments. I knew there was irritation of the center of the brain, the region of the brain stem. I couldn't see that bullet fragment, but I knew it was there from the X rays. Of course I had to leave it.

"I removed the blood, irrigated out bits of destroyed brain tissue, explored the occipital lobe and the right cerebellar hemisphere. The cerebellum was bruised and damaged all along one side. There were more bone and bullet fragments in it. The draining of the blood and the opening of the skull relieved the pressure in his head, and a third of the way through the operation he start-



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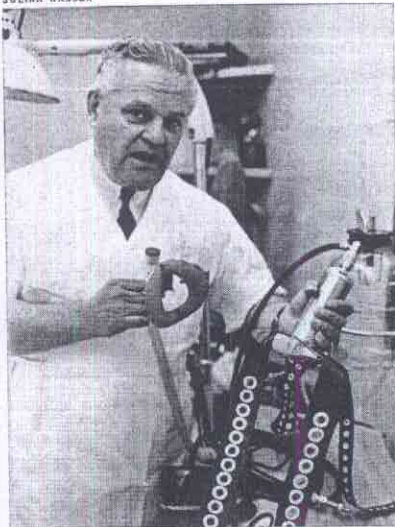
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NEUROSURGEON CUNEO

*A question not of sinking but of failing to rise.*

ed to breathe on his own again, but we kept the respirator going."

Faint Hopes. Throughout the operation, life signs—pulse, blood pressure and, later, breathing—gave rise to limited optimism among many who heard the terse bulletins issued from the hospital. The fact that he had been conscious (he had reportedly asked not to be moved immediately after the shooting) was also faintly hopeful.

When the 3-hr. 40-min. operation was over, Kennedy "stabilized pretty well," said Cuneo. An electroencephalograph showed regular brain waves. Feeding him intravenously, continuing the transfusions and the monitoring of his life forces, the doctor watched for signs of consciousness. Even then, said Cuneo, "we were certain that the future would be disastrous for the Senator if he did survive. I didn't tell Ethel all this; I just told her that we were doing everything we could."

Everything was not enough. At 1:44 a.m. Thursday (P.D.T.), 25 hours after the shots rang out, Robert Kennedy died. "The family were right around him," said Cuneo. "They'd all been at his bedside for hours. Ethel was on one side of the Senator, Ted was on the other." Kennedy never regained consciousness. "It wasn't a question of sinking," reported his grief-stricken press secretary, Frank Mankiewicz. "It was a question of not rising."

Later, after a six-hour autopsy, Los Angeles Medical Examiner Thomas T. Noguchi told reporters of the massive damage done to the right portions of Kennedy's brain. The fragments were so tiny and so numerous, he said, "it was remarkable that the neurosurgeons were able to maintain the Senator's condition until the last minute." Only after several weeks of intensive microscopic examination of the brain, the vital organs, and an "exhaustive review with members of the medical team," he said,

would a complete report be released.

The regions of Kennedy's brain that were either destroyed by bullet and bone fragments or damaged by being deprived of blood and oxygen spell the difference between living and existing and, as it turned out, between life and death. The cerebellum, located to the rear of the underside of the brain, controls motor coordination. The occipital lobe, that part of the cerebrum directly above and extending past the rear of the cerebellum, affects vision. Other lobes of the cerebrum house seats of personality, intellect, speech, memory and sensory-motor activity. The mid-brain area, directly beneath the juncture of the cerebellar hemispheres, is related to eye reflexes and both eye and body movements. It also serves as a pathway for nerve tracts running to and from the cerebellum and other parts of the brain. A bit lower and most vital is the brain stem, the "old brain," which man has shared with other creatures since the earliest stages of evolution. A passageway for nerve impulses, it monitors breathing, heartbeat, blood pressure, digestion and muscle reflexes, mediates emotions.

Last Hours. While Kennedy lay dying, neurosurgeons recalled cases in which less extensive damage to a combination of these vital areas had not prevented partial or full recovery—even after weeks of coma. Since Kennedy was right-handed, the undamaged left side of his brain was more critical to his body control. In some cases, therapy has helped brain-injured patients to train the less dominant side of the brain to take over. Such cases are rare, and for Robert Kennedy, the damage had been too extensive even for survival. Twelve hours after the operation, the recordable brain waves ceased. For seven more hours, his heartbeat and breathing continued. Then these last two life signs faltered and stopped.