

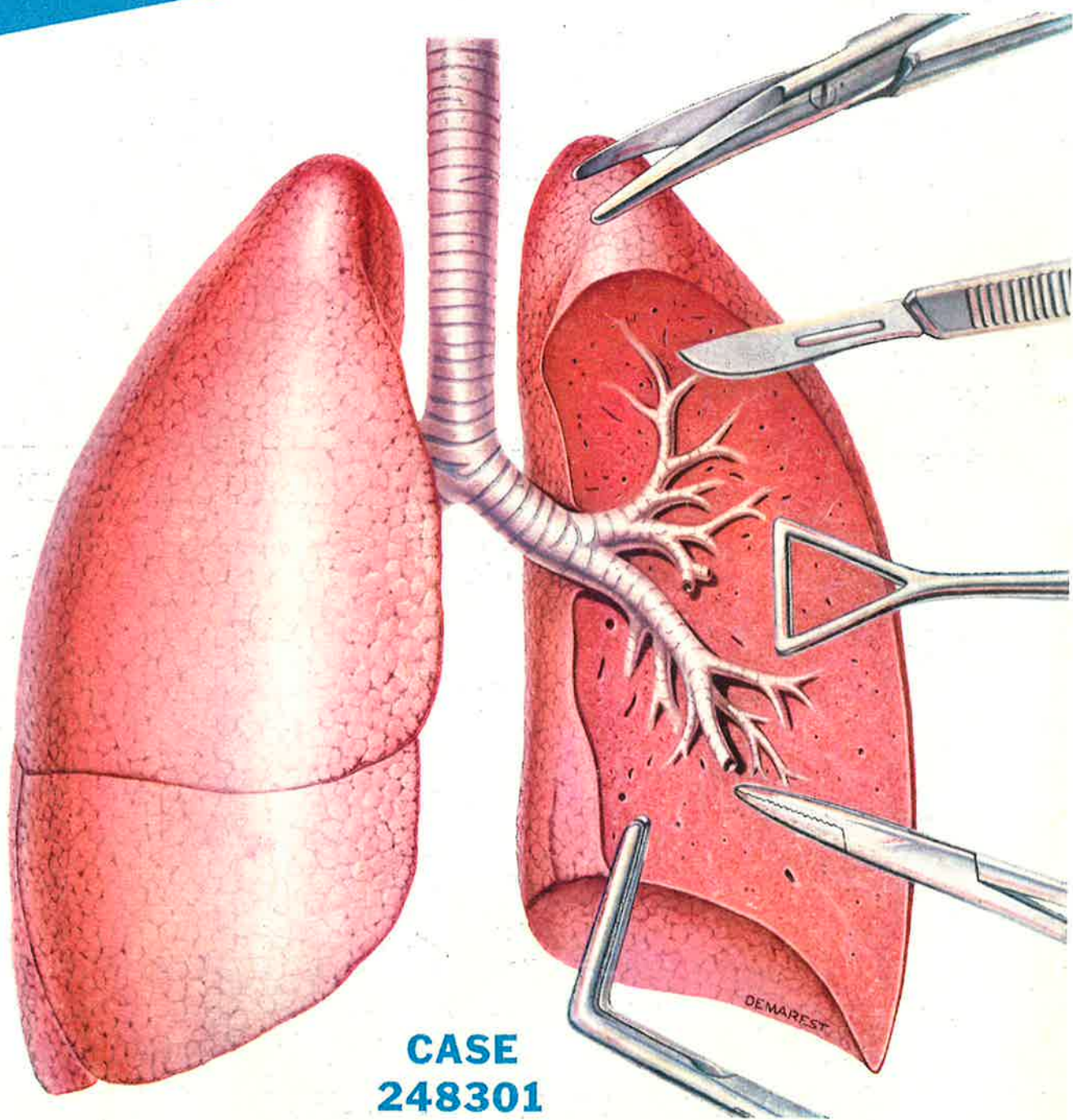
Newsweek

DIAGNOSIS: LUNG CANCER?

The Surgeon Operates
MEDICINE

JUNE 22, 1959 25c

[INDEX—PAGE 13]



CASE
248301



Cancer of the Lung—Case No. 248301

Fifty years ago, cancer of the lung was virtually unknown. Today, it kills more than 35,000 Americans a year, strikes down hundreds of thousands throughout the world, and is increasing at a rate that some doctors call "epidemic."

So far, despite intensive research, the only hope of cure is surgery—the massive, radical chest surgery recently undergone by such prominent men as Gen. Nathan Twining, chairman of the Joint Chiefs of Staff, and TV-radio star Arthur Godfrey.

In the following Special Report, NEWSWEEK's Associate Editor Calvin Tomkins goes into the operating rooms at New York's world-famous Memorial Cancer Center to watch the surgeons, as they battle this insidious killer with all the latest skills and techniques of modern medicine.

In an air-conditioned, green-tiled operating room on the twelfth floor of Memorial Hospital, a middle-aged man with thinning gray hair lies quietly waiting. He is groggy from medication, but still awake enough to notice the cloth-draped instrument tables, the hushed coming and going of nurses, the compressed silence of the strangely cluttered room. He is 58 years old, an automobile salesman in a large Eastern city, married and twice a father, once a grandfather. He is listed impersonally on the records of this renowned hospital as Case No. 248301, and he is about to undergo massive surgery. The reason is visible on the wall: Two large, illuminated chest X rays, which show an irregular shadow on his left lung. The shadow is unexplained, but everyone in the operating room, including the patient, has a pretty good idea of what it probably is—cancer of the lung.

At precisely 8:10 a.m., fifteen minutes after the patient has been wheeled in, the operating surgeon enters briskly. A

white face mask and green cotton cap frame his alert brown eyes. In these eyes, there is a hint of the "aggressive optimism" this surgeon brings to his austere and complex profession, a hint of eagerness to get on with the job and come to grips, once more, with the forces of life and death. It is like a tremendous game, the surgeon thinks, and he is "up" for it. He has performed hundreds of operations. This morning, as usual, he is well rested from a good night's sleep.

Casually, the surgeon greets the patient, and the men and women whose skill he will need almost as much as his own in the hours that stretch before him: The resident and assistant surgeons, fully qualified young doctors who have volunteered for Memorial's two-year program of specialized cancer training; the anesthesiologist, also an M.D., a darkly pretty girl from the Philippines (Memorial's staff has dozens of foreign-born doctors who have come to learn the new techniques of cancer warfare); the "sterile" nurse who handles the glittering

array of several hundred instruments and the "unsterile" nurse who helps her but who need not be sterile, because her hands never touch an instrument (if she is called on to procure a special instrument from a cabinet, she uses tongs).

The anesthesiologist gives the patient an injection of Sodium Pentothal, and asks him to begin counting aloud. "One . . . two . . . three . . . four . . ." The patient's voice thickens—"five . . . six"—and then breaks off as the drug takes rapid effect. Two more injections follow: A local anesthetic below the Adam's apple to deaden the vocal cords and prevent coughing, and a paralytic (derived from curare, a South American Indian arrow poison) to prevent muscle spasms. Suddenly this man, who but a moment before was counting aloud, seems hardly a man at all.

Tubing: He must be made to breathe, and to keep breathing during the long hours ahead. And so the professionals deftly insert a hard rubber tube down his windpipe, through which the anesthesiologist will pump a mixture of oxygen, ether, and other gases throughout the operation. (Without this tube, the patient's lungs would collapse the moment his chest was opened and the body's delicate pressure balance was upset.) He must be turned on his right side, and firmly secured with broad strips of adhesive tape; they put him into position. His left side must be painted with an orange-tinted antiseptic. And then he must be draped with sterile green sheets and towels, until only the operative area, about a foot square, is still exposed. Even his head is cur-

tained off from the operating area.

To an onlooker, the patient has lost all his identity. But not to the three surgeons who now go into the next room to scrub their hands and arms for five full minutes (sandglass timers over each deep sink mark the time). As they scrub, the doctors review the details of the case. The time is 8:40.

Three months ago, Case No. 248301 became aware of a dull pain in his chest. At first he blamed it on a fall from a stepladder a few days before, while he was painting a living-room ceiling. "That's what's so insidious," the surgeon observes, still scrubbing. "The pain masquerades as something else—a bruise, a touch of neuralgia—and they think nothing of it." When the chest pain persisted,

record of his pulse and blood pressure. It is now 8:55.

"All right," the surgeon says. The sterile nurse hands him the razor-keen, 4-inch-long scalpel. "Ready?"

The scalpel moves in a swift, unhesitating arc from mid-chest all the way around to a point near the spine, slicing through the thin envelope of skin and exposing fat and muscle. A spot of blood appears, and the resident quickly pinches off the blood vessel with a blunt, scissorlike clamp, which the nurse slaps smartly into his outstretched hand. Another spot of blood, another clamp, and still another and another. All three men then collaborate on tying off the clamped blood vessels with silk thread. The assistant sponges away what little blood has escaped.

Basic Cycle: Twice more the basic surgical cycle of cut-clamp-tie is repeated as the incision deepens. The surgeon is cutting "through the Lats" as they used to say when he was at Columbia College of Physicians and Surgeons—through the large muscles known as Latissimus Dorsi. A good surgeon, the old saying goes, must have "an eagle's eye, a lion's heart, and a woman's hand."

The ribs are visible now under their tough coating (periosteum). The surgeon counts them with his fingers, locates the fifth, and scrapes away the periosteum with a Baily scraper. With a pair of powerful Bethune rib cutters he severs the curved bone at either end, and hands it across to the nurse. Ordinarily, the rib would go to the bone bank for possible use in plastic surgery (particularly useful in nose grafts). The surgeon says: "I wouldn't save this one. I think this fellow has cancer." Just beneath the rib cage, the lung can be seen through its translucent coating.

Inventory: "Can we have a sponge count?" the surgeon asks quietly. "We're going into the chest." The "unsterile" nurse gathers up all the gauze pads (sponges) used so far and checks them against the inventory taken before the operation. From now on, to be sure that no small pads get mislaid inside the patient, only large sponges with heavy metal rings attached will be used in the chest. "Your count is correct," the "unsterile" nurse says. It is now 9:35; it has taken 1 hour and 25 minutes to reach this vital stage of the operation.

The pleura, a delicate membrane encasing the lungs, is severed easily. Heavy metal rib spreaders that operate like a vise in reverse force back the ribs on either side of the missing fifth, leaving an area some 5 inches across in which the surgeon can now maneuver. Suddenly the whole interior of the chest is laid open. It is nearly filled by the enormous, shiny, soft expanse of the lungs, purple and dark-mottled from years of (normal) carbon deposits, swelling and

contracting as the anesthesiologist rhythmically squeezes a pressure bag to make the patient breathe.

"How's he doing?" the surgeon asks.

"He's doing fine," the anesthesiologist replies. (She had started a blood transfusion some time ago.) The surgery of the chest, heart, and lungs is a twentieth-century miracle, made possible by improved techniques in blood transfusion, anesthesia, and the antibiotic germ killers. Thirty years ago, this operation would have been unthinkable; today, less than 2 per cent of patients fail to survive chest surgery. But the statistics of lung-cancer survival are grimmer. In about 55 per cent of its victims, surgery is impossible because the cancer has already spread too far; when surgery is performed, only about 25 per cent are alive five years later.

The surgeon has now begun his careful, thorough exploration of the chest cavity. He massages the lung, feeling over the entire surface and probing between the lobes (two for the left lung, three for the right). On the left upper lobe he has located the hard, grayish cellular lump that corresponds to the X-ray shadow. The resident and assistant both feel it, in turn. The surgeon then shaves off a small piece with a scalpel and hands it to a nurse, who quickly wraps it in waxed paper and sends it by pneumatic tube to the pathology lab ten floors below for a "frozen section," or quick microscopic analysis. It is 10:10.

With the lungs partially collapsed, the surgeon then reaches behind them to examine the heart and its major artery, the aorta. Adhering to the aorta, which



Newsweek—Tony Rolto

Heart of lion, hand of woman

the patient went to see his home-town doctor. He had no other symptoms, such as bloody sputum, weight loss, or night sweats. But the doctor advised chest X rays. These showed a shadow on the upper lobe of the left lung. Admitted to Memorial two days later on the advice of his family physician, he underwent sputum tests and bronchial examination. The results were suspicious enough to warrant an exploratory thoracotomy—the operation he now faces.

The surgeons return to the operating room. They are helped into rubber gloves so thin that the hair of their hands shows through, and into green operating robes by the sterile nurse (green is easier on the eyes than white). The anesthesiologist sits by the patient's head, where she will keep a running

Cigarettes . . .

Q. Since the 1920s, the American death rate from lung cancer has spiraled upward: Each year, lung cancer kills 2,000 more Americans than the year before. What causes this rise?

A. One reason is that people today are living longer. Tuberculosis and pneumonia deaths have been sharply reduced. And cancer strikes mainly those over 50.

Q. But why is lung cancer increasing so much faster than all other cancers?

A. Scientists are investigating several possible factors, including air pollution, radiation, diet, viruses, and cigarette smoking.

Q. What about cigarettes?

A. Dr. E. Cuyler Hammond, chief statistician for the American Cancer Society, believes increased cigarette smoking is the major factor in lung cancer's rise. Two years ago, with Dr. Daniel Horn, he announced the results of a statistical

is the size of a garden hose, is a suspicious growth.

While the assistant holds the lungs back with his hand, the surgeon reaches deep into the chest with long-handled scissors. Very slowly, he pushes the blunt tips between the aorta and the suspicious layer, snipping it up and away. A slip could mean disaster. Blood flows through the aorta under such pressure that a puncture could make it "hit the ceiling."

Ten minutes later, he has freed the growth and handed the nurse another piece of tissue for frozen section.

In the pathology lab, the first frozen section has been under the microscope, and the mosaic-like characteristics of the malignant cells are clearly visible. The pathologist telephones the surgical floor and, in a moment, a nurse pushes open the swinging door to announce in careful diction: "Doctor, Frozen Section No. 1 shows carcinoma." Minutes later she returns with the report on Section No. 2; it, too, shows cancer. The surgeon and his resident look at each other, over their masks.

"Radical pneumonectomy?"

"I'm afraid not," the surgeon replies. "The patient can't live on one lung."

Decision: Removal of the entire lung, or radical pneumonectomy, would perhaps give a better chance of catching all the cancer in this man. But preoperative tests, which included having him run up a flight of stairs, proved that his respiratory system was too weak; with one lung gone, he would be a "respiratory cripple," unable to stand the least exertion. The surgeon has therefore decided to perform a radical lobectomy—removal of



The First

The removal of an entire lung—radical pneumonectomy—was first attempted just 26 years ago, in the Barnes Hospital in St. Louis, Mo. The surgeon was Dr. Evarts A. Graham, "father of modern chest surgery." His patient was Dr. James L. Gilmore (photo), whose cancer had spread to both lobes of the left lung. Dr. Graham had removed entire lungs from animals and believed it could be done on a human being. His associate would not venture an opinion.

Dr. Graham removed the lung. Dr. Gilmore is alive today, practicing obstetrics in Pittsburgh. Two years ago, Dr. Evarts Graham died—of lung cancer.

the diseased upper lobe and its regional lymph nodes—glands in which the cancer cells may be entrapped.

With the decision made, the tempo changes, quickens. The surgeons locate the main arterial branches leading to the upper lobe, tie them off, cut between the ties. They do the same with the corresponding pulmonary veins. Only a spur of the bronchus—the organ that brings air to the lungs—now joins the upper and lower lobes. The surgeon severs this with a right-angle scalpel. The assistant lifts out the soft, spongy lobe and passes it to the nurse. She wraps it, also, in waxed paper, labels it, and sends it to the lab for a thorough painstaking analysis.

The severed bronchus is sutured, then sealed with a flap of pleural tissue. Sew-

ing deep within the chest is a delicate art; as a younger man, the surgeon used to practice by tying knots inside an empty tennis-ball can. Two bowlfuls of water are poured into the chest, to test for air leaks. There are no bubbles—the bronchus seal is tight. The resident injects a local anesthetic into exposed nerve endings, to deaden postoperative pain (its effects last five days). Now the doctors begin closing the chest.

Renewal: Steel rib "approximators" pull the ribs back together. The patient will not miss his rib for long. In a year he will have grown a new one. Layer by layer, the chest wall, muscle, and skin tissue are sutured with curved needles. Muscles grow back better than before. "I've taken more slices out of golfers'

... And What the Experts Say of Smoking Now

study of 187,783 white males aged 50 to 69. They reported that men who smoked two or more packs of cigarettes a day had a death rate from lung cancer 60 times as high as nonsmokers.

Q. What ingredient in cigarettes may cause lung cancer?

A. Some U.S. scientists are searching for specific cancer-causing agents in tobacco tars. Dr. Hammond doubts they will find any. "More likely, we will find that cigarette smoking puts a general strain on the body," he predicted. "It's as though a seriously ill man were to run up a flight of stairs and drop dead. The flight of stairs didn't make him sick. Just the same, it did bring about his death."

Q. Have other scientists accepted the statistical evidence linking cigarette smoking with lung cancer?

A. After a study of eighteen research reports from five countries, the American

Medical Association and the U.S. Public Health Service both warned that excessive cigarette smoking (more than a pack a day) is one of the causative factors in lung cancer.

Q. On what grounds, then, has the Tobacco Industry Research Committee questioned the Hammond-Horn findings?

A. Dr. Clarence C. Little, the committee's scientific director, has pointed out that the Hammond-Horn study failed to take into account such other possible factors as sex, personality, and previous infections. His view is shared by a Mayo Foundation statistician, Dr. Joseph Berkson, who recently said that no statistical study to date has defined the biology of lung cancer.

Q. Does Dr. Little completely reject the Hammond-Horn study?

A. No. Last week, Dr. Little said: "The statistics show some kind of association—

but not a causative relationship—between excessive cigarette smoking and lung cancer. I think the results are highly suggestive. They cannot be ignored." Dr. Little said he agreed that the possibility that excessive cigarette smoking may weaken the body, leaving it open to attack by cancer as well as other diseases, should get further study. But while Dr. Hammond calls smoking "the major factor" in this weakening, Dr. Little thinks that other factors, including radiation and air pollution, may be more important.

Q. What about experiments which have shown that certain chemicals in cigarette tars cause cancer in mice?

A. Dr. Hammond agrees with Dr. Little that these experiments do not necessarily apply to humans. "We know," he said, "that arsenic causes skin cancer in humans, for example, but we have not been able to make arsenic produce cancer in mice."

drives," says the surgeon, "by removing lungs." Some 250-350 knots of black silk thread or catgut will be left inside the patient, harmless and permanent. Working at top speed, the sterile nurse keeps both surgeon and resident supplied with threaded needles; the assistant ties the knots.

At 12:20 the incision is closed. The whole operation has taken four and a half hours. The patient, who is already beginning to emerge from deep anesthesia, goes now to a recovery room where special nurses ease his post-operative hours. He will be uncomfortable for a while, but in no real pain. About ten days from now he will leave the hospital. But only time can tell whether the operation has been successful, or whether microscopic cancer cells have spread to other organs where they will continue their aggressive, deadly growth. If he is free of cancer five years from now, he will be one of the fortunate few—about ten out of every hundred lung-cancer victims—who can consider himself cured.

Pending a major breakthrough in cancer research, the doctors look to earlier diagnoses (i.e., regular X-ray checkups) as the best means of altering this grim average. X-ray therapy, the use of radioactive isotopes, and the experimental chemicals (such as the nitrogen mustards) sometimes give spectacular relief of symptoms, and may eventually produce the long-sought cure. Surgery alone can do no more.

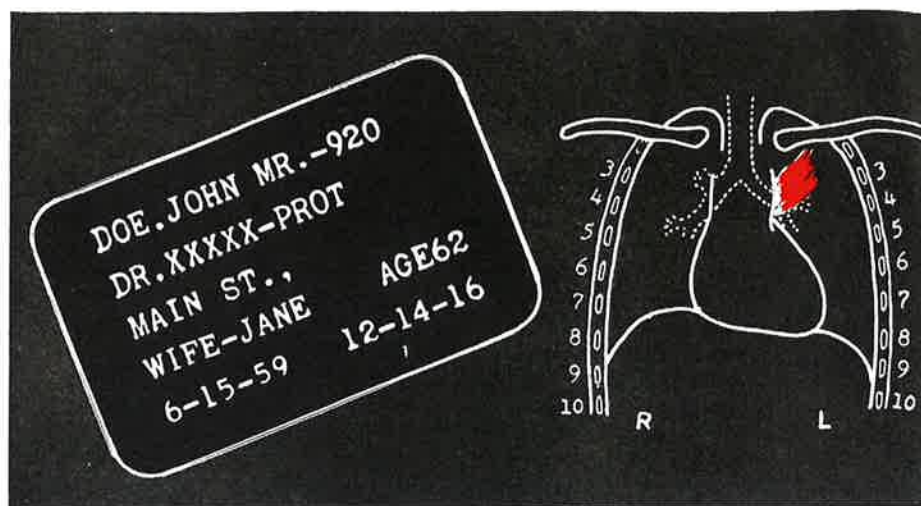
AMA:

New Cures and a Test

For five bustling days last week Atlantic City was America's medical mecca, thronged by some 30,000 doctors (and their relatives), nurses, medical students, and lab technicians attending the 108th annual meeting of the American Medical Association. The visitors shop-talked on the boardwalk, watched televised operations, visited 600 medical and 400 industrial exhibits, listened to 500 scientific papers on everything from jet-flight medicine to hypnosis, from athletic injuries to problems of aging. Among the significant findings:

►Grafts of plastic arteries can save the lives of two out of five victims of cerebral hemorrhages, or "strokes," reported Dr. Michael E. De Bakey, head of surgery at Baylor Medical Center, Houston, Texas. About 40 per cent of all strokes occur outside the brain, in any one of four blood vessels which lie on both sides of the neck, Dr. De Bakey explained. These arteries close abruptly, halting the vital blood flow to the brain. The rest of the strokes occur in the brain itself and cannot be repaired. But the damaged neck arteries can be patched up with

(Continued on Opposite Page)



'Be Gentle,' the Surgeon Said . . .

In cancer surgery, nothing is ever certain or obvious.

Another patient at Memorial Hospital at the same time as Case No. 248301 was a 217-pound giant of a man over 6 feet tall. A week before his operation, he had started coughing blood. His family doctor had him X-rayed, and told him the bad news: It looked like lung cancer. He panicked, this vigorous, 62-year-old man (a two-pack-a-day smoker) who never in his life had been seriously ill. He entered Memorial on a Monday, demanding an immediate operation; on Tuesday morning he was on the operating table.

Forty-five minutes after the first incision, the surgeon was probing the chest cavity with long gloved fingers. He felt the upper lobe, then the lower; he reached behind the lungs to the aorta. Then his hands came to rest. "Oh, Lord," he breathed, shaking his head. "This is what we don't like to find. I'm afraid the pericardium [a sac containing the heart] is affected. This looks like one for the radiologist."

Because the suspected cancer seemed to have invaded so many areas, surgical removal was impossible. So the surgeon called in a specialist who would inject small metal seeds containing iridium (a radioactive isotope) into the diseased area. These seeds remain inside the patient, who must then undergo a period of relative isolation until he "cools down" radioactively; for two months after leaving the hospital, he should stay at least 6 feet away from all other people. The treatment may give a long remission of his symptoms, but the cancer usually returns.

While waiting for the radiologist, the surgeon cautiously took a piece of tissue with a scalpel and sent it down to

pathology for analysis. From another area of the lung, he dissected a lymph node and sent it down too.

The radiologist "scrubbed in" and made his own exploration of the chest. "Be gentle," the surgeon warned. "It's nice and small and in a terrible position. Please be very gentle," he added—and this time it was a command.

The radiologist's impression was the same as the surgeon's: Cancer invading the heart. "Everywhere it's the same story," the surgeon said, hands tucked in the front of his green gown. "We're getting there too late to save them."

The nurse supervisor pushed open the hall door. It was just eight minutes since the two specimens had gone down to pathology. "Doctor," she said, "Number One frozen section is benign."

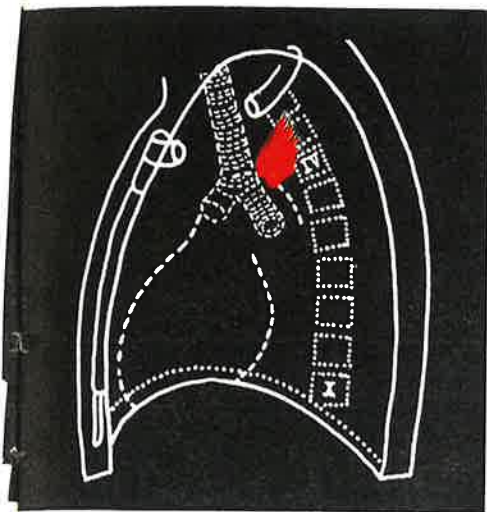
The surgeon looked incredulous. "We'll see what the next report shows."

Rising Tension: Minutes later, the nurse reappeared. "Doctor, Number Two frozen section is benign. Possibly inflammatory." All eyes focused on the surgeon. Inflammation is associated with tuberculosis and pneumonia, as well as with cancer.

"Maybe we're not getting representative tissue," the surgeon mused. "We'll just have to get some fresh material. May I have an aspirator, please?"

The "sterile" nurse unwrapped an aspirator from its special cloth bag, attached the long needle to the glass tube, handed it to the surgeon. With his left hand, he supported the lung from underneath; with his right he pushed the needle deep into the lung.

Ten minutes later, when the nurse supervisor opened the swinging door, everyone in the operating room looked up quickly. Enunciating carefully, she said: "Doctor, Number Three speci-



... 'Be Gentle'

men is benign, probably inflammatory."

"We'll take one more," the surgeon said, frankly astonished. With a new aspirator, he pushed the needle deep into the core of the suspected area. No one said a word. He held the aspirator up to the light and squirted several drops on a slide. The fluid-like material was gray and viscous. "If that isn't cancer," the surgeon said grimly, "it's one to fool the experts."

Silent Struggle: A change had taken place in the operating room. It was as though the patient himself was waging a silent battle against all the odds, and just possibly winning. About eight minutes passed.

"Doctor," said the nurse supervisor on her return, coming all the way into the room this time, "Number Four frozen section is benign." A long sigh broke from several throats.

"Well," said the surgeon, "let's have one more look." While the resident held back the lungs, he examined the whole chest cavity again. Suddenly he said to the resident: "Look! Look here! I've found pus!" The appearance of pus in this setting tended to confirm the reports from pathology—it indicated an inflammatory condition, which would almost surely respond to antibiotics. The suspicious area near the heart that had looked like cancer on the X rays, had looked and felt like cancer to four surgeons, was found, upon subsequent laboratory analysis, to be a fungus-type infection called actinomycosis.

"By God," the surgeon said, "we're going to cure this fellow." As the doctors began closing the chest, the surgeon added: "But now how the hell are we going to convince him, when he wakes up, that he doesn't have lung cancer after all?"

MEDICINE

(Continued from Preceding Page)

plastic tubing of woven Dacron fibers, which comes in many shapes and sizes. With this technique, Dr. De Bakey estimates that at least one-half of all stroke victims could be spared paralysis if operated on with the plastic grafts immediately after an attack. For this delicate surgical feat, now in use in more than twelve U.S. medical centers, Dr. De Bakey received the Distinguished Service Medal of the AMA.

►Walter Reed Army medical researchers have developed a new "sword-swallowing" test for cancer and other conditions. The "sword" is a small, rotating, spring-activated knife, contained in a tiny capsule, which the patient swallows. The capsule is attached to a long, thin tube. Suction through the tube pulls a piece of tissue into the capsule. The knife is automatically opened and cuts a sliver of tissue, then the capsule is drawn up through the patient's throat.

►Acne is an inherited disease, which cannot be cured by cleanliness, vitamins, or a controlled diet, said Dr. Albert M. Kligman of the University of Pennsylvania School of Medicine, Philadelphia, and Dr. John Strauss of Boston University, directors of the first strictly controlled, long-term acne experiment on a group of adolescents. The stubborn skin disease is caused by inherited large sebaceous (oil) glands that secrete sebum, a fatty substance that lubricates the skin. X rays help, but they are potentially dangerous, and can be used only in limited quantities. Sunlight is now the most helpful balm, but "not a 100 per cent cure." Currently, skin specialists are using a modified female sex hormone to lower the fatty substance, with encouraging results.

►The stubborn fungus infections known as "ringworm" (including athlete's foot) can now be relieved, quickly and effectively, by tablets of a new germ killer taken by mouth. Enthusiastic reports from a panel of skin specialists pronounced the compound—called, scientifically, griseofulvin (Schering trade name, Fulvicin; McNeill Laboratories, Grifulvin)—the first "consistently reliable" therapy for these age-old infections.

►A new metal "spine jack" to reduce curvatures of the backbone, was demonstrated by Dr. H. Leslie Wenger, New York orthopedic surgeon. The jack, about 6 inches long, operates much the same as the jack used to lift the front of a car. The device is attached through the skin to the curved spine with two screws, then cranked with a wrench to gradually straighten the backbone. In 50 cases, described by Dr. Wenger, curvatures were reduced 20 to 30 degrees. Patients are on their feet in five days, instead of spending months in a hospital bed, or in plaster casts.

—SPACE AND ATOM

SATELLITES:

'Cops' on a Nuclear Beat?

If all goes as scheduled, a brilliant theoretical physicist, named Wolfgang Panofsky, from Stanford University will leave Washington for Geneva this week to join the nuclear-test-ban talks under way since Oct. 31, 1958. With him he will carry a new and ambitious American plan for a joint East-West space satellite patrol to police a test ban.

Barring last-minute changes in the secret proposal, the U.S. will ask the Russians and the British to join with it in launching and maintaining twelve atom-patrol satellites in orbit at all times. Each would be equipped to detect nuclear blasts above the atmosphere (pegged at 31 miles) and to radio back the record of the violator's act to an international network. Six of the satellites would be sent into earth-hugging orbits, spaced and timed to cover all of space under 600 miles altitude—like cops on a beat.

The other six would be rocketed into 40,000-mile-high orbits, sixteen times higher than any satellite launched to date by any nation. On this beat, the electronic eyes of the patrol satellites would be responsible for detecting any clandestine shots conducted in that vast area between the sun and Mars. Any nation willing to rocket a nuclear warhead beyond 100 million miles to test a new weapon design, would probably get away with it (a possibility no one is particularly worried about).

No Place to Go? In the opinion of its backers, the satellite-patrol plan effectively blankets the fourth—and final—arena available to a nation determined to cheat on a ban. Previously, representatives of the Big Three nuclear powers agreed that an earth-wide network of 180 stations would be able to monitor most if not all underground, surface, and atmosphere tests (see INTERNATIONAL).

The U.S. plan was hammered out by a special fifteen-man study group set up by Dr. James Killian, until last month the head of President Eisenhower's Science Advisory Committee. The group, made up of some of the nation's leading theoretical physicists and rocket-propulsion experts, was headed by Dr. Panofsky of Stanford. Berlin-born, Panofsky came to the U.S. in the 1930s and was graduated from Princeton in 1938. Now 40, he is one of the world's top high-energy physicists, but his name is hardly known outside the 12,000 readers of *The Physical Review*.

This much can be said about the plan he is slated to present on June 22:

►The basic idea for a satellite-patrol system is not a new one. It was discussed in general last summer at Geneva. So much more about space has been learned since then, however, that the 1958 dis-



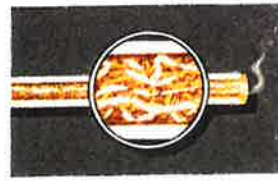
© A. T. Co.

Get satisfying flavor...So friendly to your taste!

NO FLAT
"FILTERED-OUT"
FLAVOR!

NO DRY
"SMOKED-OUT"
TASTE!

See how Pall Mall's famous length of fine tobacco travels and gentles the smoke—makes it mild—but does not filter out that satisfying flavor!



HERE'S WHY SMOKE "TRAVELED" THROUGH FINE TOBACCO TASTES BEST

Outstanding...
and they are Mild!

1 You get Pall Mall's famous length of the finest tobaccos money can buy.

2 Pall Mall's famous length travels and gentles the smoke naturally...

3 Travels it over, under, around and through Pall Mall's fine tobaccos!

Product of The American Tobacco Company—"Tobacco" is our middle name