THE TUSKEGEE SYPHILIS EXPERIMENT

"A Moral Astigmatism"

James Jones

In late July of 1972, Jean Heller of the Associated Press broke the story: for forty years the United States Public Health Service (PHS) had been conducting a study of the effects of untreated syphilis on black men in Macon County, Alabama, in and around the county seat of Tuskegee. The Tuskegee Study, as the experiment had come to be called, involved a substantial number of men: 399 who had syphilis and an additional 201 who were free of the disease chosen to serve as controls. All of the syphilitic men were in the late stage of the disease when the study began.[1]

Under examination by the press the PHS was not able to locate a formal protocol for the experiment. Later it was learned that one never existed; procedures, it seemed, had simply evolved. A variety of tests and medical examinations were performed on the men during scores of visits by PHS physicians over the years, but the basic procedures called for periodic blood testing and routine autopsies to supplement the information that was obtained through clinical examinations. The fact that only men who had late, so-called tertiary, syphilis were selected for the study indicated that the investigators were eager to learn more about the serious complications that result during the final phase of the disease.

The PHS officers were not disappointed. Published reports on the experiment consistently showed higher rates of mortality and morbidity among the syphilitics than the controls. In fact, the press reported that as of 1969 at least 28 and perhaps as many as 100 men had died as a direct result of complications caused by syphilis. Others had developed serious syphilis-related heart conditions that may have contributed to their deaths.[2]

The Tuskegee Study had nothing to do with treatment. No new drugs were tested; neither was any effort made to establish the efficacy of old forms of treatment. It was a nontherapeutic experiment, aimed at compiling data on the effects of the spontaneous evolution of syphilis on black males. The magnitude of the risks taken with the lives of the subjects becomes clearer once a few basic facts about the disease are known.

Syphilis is a highly contagious disease caused by the *Treponema pallidum*, a

delicate organism that is microscopic in size and resembles a corkscrew in shape. The disease may be acquired or congenital. In acquired syphilis, the spirochete (as the *Treponema pallidum* is also called) enters the body through the skin or mucous membrane, usually during sexual intercourse, though infection may also occur from other forms of bodily contact such as kissing. Congenital syphilis is transmitted to the fetus in the infected mother when the spirochete penetrates the placental barrier.

From the onset of infection syphilis is a generalized disease involving tissues throughout the entire body. Once they wiggle their way through the skin or mucous membrane, the spirochetes begin to multiply at a frightening rate. First they enter the lymph capillaries where they are hurried along to the nearest lymph gland. There they multiply and work their way into the bloodstream. Within days the spirochetes invade every part of the body.

Three stages mark the development of the disease: primary, secondary, and tertiary. The primary stage lasts from ten to sixty days starting from the time of infection. During this "first incubation period," the primary lesion of syphilis, the chancre, appears at the point of contact, usually on the genitals. The chancre, typically a slightly elevated, round ulcer, rarely causes personal discomfort and may be so small as to go unnoticed. If it does not become secondarily infected, the chancre will heal without treatment within a month or two, leaving a scar that persists for several months.[3]

While the chancre is healing, the second stage begins. Within six weeks to six months, a rash appears signaling the development of secondary syphilis. The rash may resemble measles, chicken pox, or any number of skin eruptions, though occasionally it is so mild as to go unnoticed. Bones and joints often become painful, and circulatory disturbances such as cardiac palpitations may develop. Fever, indigestion, headaches, or other nonspecific symptoms may accompany the rash. In some cases skin lesions develop into moist ulcers teeming with spirochetes, a condition that is especially severe when the rash appears in the mouth and causes open sores that are viciously infectious. Scalp hair may drop out in patches, creating a "moth-eaten" appearance. The greatest proliferation and most widespread distribution of spirochetes throughout the body occurs in secondary syphilis.[4]

Secondary syphilis gives way in most cases, even without treatment, to a period of latency that may last from a few weeks to thirty years. As if by magic, all symptoms of the disease seem to disappear, and the syphilitic patient does not associate with the disease's earlier symptoms the occasional skin infections, periodic chest pains, eye disorders, and vague discomforts that may follow. But the spirochetes do not vanish once the disease becomes latent. They bore into the bone marrow, lymph glands, vital organs, and central nervous systems of their victims. In some cases the disease seems to follow a policy of peaceful coexistence, and its hosts are able to enjoy full and long lives. Even so, autopsies in such cases often reveal syphilitic lesions in vital organs as contributing causes of death. For many syphilitic patients, however, the disease remains latent only two

or three years. Then the delusion of a truce is shattered by the appearance of signs and symptoms that denote the tertiary stage.

It is during late syphilis, as the tertiary stage is also called, that the disease inflicts the greatest damage. Gummy or rubbery tumors (so-called gummas), the characteristic lesions of late syphilis, appear, resulting from the concentration of spirochetes in the body's tissues with destruction of vital structures. These tumors often coalesce on the skin forming large ulcers covered with a crust consisting of several layers of dried exuded matter. Their assaults on bone structure produce deterioration that resembles osteomyelitis or bone tuberculosis. The small tumors may be absorbed, leaving slight scarred depressions, or they may cause wholesale destruction of the bone, such as the horrible mutilation that occurs when nasal and palate bones are eaten away. The liver may also be attacked; here the result is scarring and deformity of the organ that impede circulation from the intestines.

The cardiovascular and central nervous systems are frequent and often fatal targets of late syphilis. The tumors may attack the walls of the heart or the blood vessels. When the aorta is involved, the walls become weakened, scar tissue forms over the lesion, the artery dilates, and the valves of the heart no longer open and close properly and begin to leak. The stretching of the vessel walls may produce an aneurysm, a ballonlike bulge in the aorta. If the bulge bursts, and sooner or later most do, the result is sudden death.

The results of neurosyphilis are equally devastating. Syphilis is spread to the brain through the blood vessels, and while the disease can take several forms, the best known is paresis, a general softening of the brain that produces progressive paralysis and insanity. Tabes dorsalis, another form of neurosyphilis, produces a stumbling, foot-slapping gait in its victims due to the destruction of nerve cells in the spinal cord. Syphilis can also attack the optic nerve, causing blindness, or the eighth cranial nerve, inflicting deafness. Since nerve cells lack regenerative power, all such damage is permanent.

The germ that causes syphilis, the stages of the disease's development, and the complications that can result from untreated syphilis were all known to medical science in 1932—the year the Tuskegee Study began.

Since the effects of the disease are so serious, reporters in 1972 wondered why the men agreed to cooperate. The press quickly established that the subjects were mostly poor and illiterate, and that the PHS had offered them incentives to participate. The men received free physical examinations, free rides to and from the clinics, hot meals on examination days, free treatment for minor ailments, and a guarantee that burial stipends would be paid to their survivors. Though the latter sum was very modest (fifty dollars in 1932 with periodic increases to allow for inflation), it represented the only form of burial insurance that many of the men had.

What the health officials had told the men in 1932 was far more difficult to determine. An officer of the venereal disease branch of the Centers for Disease Control in Atlanta, the agency that was in charge of the Tuskegee Study in 1972,

assured reporters that the participants were told at the beginning that they had syphilis and were told what the disease could do to them, and that they were given the opportunity to withdraw from the program any time and receive treatment. But a physician with firsthand knowledge of the experiment's early years directly contradicted this statement. Dr. J. W. Williams, who was serving his internship at Andrews Hospital at the Tuskegee Institute in 1932 and assisted in the experiment's clinical work, stated that neither the interns nor the subjects knew what the study involved. "The people who came in were not told what was being done," Dr. Williams said. "We told them we wanted to test them. They were not told, so far as I know, what they were being treated for or what they were not being treated for." As far as he could tell, the subjects "thought they were being treated for rheumatism or bad stomachs." He did recall administering to the men what he thought were drugs to combat syphilis, and yet as he thought back on the matter, Dr. Williams conjectured that "some may have been a placebo." He was absolutely certain of one point: "We didn't tell them we were looking for syphilis. I don't think they would have known what that was."[5]

A subject in the experiment said much the same thing. Charles Pollard recalled clearly the day in 1932 when some men came by and told him that he would receive a free physical examination if he appeared the next day at a nearby one-room school. "So I went on over and they told me I had bad blood," Pollard recalled. "And that's what they've been telling me ever since. They come around from time to time and check me over and they say, 'Charlie, you've got bad blood.' "[6]

An official of the Centers for Disease Control (CDC) stated that he understood the term "bad blood" was a synonym for syphilis in the black community. Pollard replied, "That could be true. But I never heard no such thing. All I knew was that they just kept saying I had the bad blood—they never mentioned syphilis to me, not even once." Moreover, he thought that he had been receiving treatment for "bad blood" from the first meeting on, for Pollard added: "They been doctoring me off and on ever since then, and they gave me a blood tonic."[7]

The PHS's version of the Tuskegee Study came under attack from yet another quarter when Dr. Reginald G. James told his story to reporters. Between 1939 and 1941 he had been involved with public health work in Macon County—specifically the diagnosis and treatment of syphilis. Assigned to work with him was Eunice Rivers, a black nurse employed by the Public Health Service to keep track of the participants in the Tuskegee Study. "When we found one of the men from the Tuskegee Study," Dr. James recalled, "she would say, 'He's under study and not to be treated.' " These encounters left him, by his own description, "distraught and disturbed," but whenever he insisted on treating such a patient, the man never returned. "They were being advised they shouldn't take treatments or they would be dropped from the study," Dr. James stated. The penalty for being dropped, he explained, was the loss of the benefits that they had been promised for participating.[8]

Once her identity became known, Nurse Rivers excited considerable interest, but she steadfastly refused to talk with reporters. Details of her role in the experiment came to light when newsmen discovered an article about the Tuskegee Study that appeared in *Public Health Reports* in 1953. Involved with the study from its beginning, Nurse Rivers served as the liaison between the researchers and the subjects. She lived in Tuskegee and provided the continuity in personnel that was vital. For while the names and faces of the "government doctors" changed many times over the years, Nurse Rivers remained a constant. She served as facilitator, bridging the many barriers that stemmed from the educational and cultural gap between the physicians and the subjects. Most important, the men trusted her.[9]

As the years passed the men came to understand that they were members of a social club and burial society called "Miss Rivers' Lodge." She kept track of them and made certain that they showed up to be examined whenever the "government doctors" came to town. She often called for them at their homes in a shiny station wagon with the government emblem on the front door and chauffeured them to and from the place of examination. According to the *Public Health Reports* article, these rides became "a mark of distinction for many of the men who enjoyed waving to their neighbors as they drove by." There was nothing to indicate that the members of "Miss Rivers' Lodge" knew they were participating in a deadly serious experiment.[10]

Spokesmen for the Public Health Service were quick to point out that the experiment was never kept secret, as many newspapers had incorrectly reported when the story first broke. Far from being clandestine, the Tuskegee Study had been the subject of numerous reports in medical journals and had been openly discussed in conferences at professional meetings. An official told reporters that more than a dozen articles had appeared in some of the nation's best medical journals, describing the basic procedures of the study to a combined readership of well over a hundred thousand physicians. He denied that the Public Health Service had acted alone in the experiment, calling it a cooperative project that involved the Alabama State Department of Health, the Tuskegee Institute, the Tuskegee Medical Society, and the Macon County Health Department.[11]

Apologists for the Tuskegee Study contended that it was at best problematic whether the syphilitic subjects could have been helped by the treatment that was available when the study began. In the early 1930s treatment consisted of mercury and two arsenic compounds called arsphenamine and neoarsphenamine, known also by their generic name, salvarsan. The drugs were highly toxic and often produced serious and occasionally fatal reactions in patients. The treatment was painful and usually required more than a year to complete. As one CDC officer put it, the drugs offered "more potential harm for the patient than potential benefit."[12]

PHS officials argued that these facts suggested that the experiment had not been conceived in a moral vacuum. For if the state of the medical art in the early 1930s had nothing better than dangerous and less than totally effective treatment to offer, then it followed that, in the balance, little harm was done by leaving the men untreated.[13]

Discrediting the efficacy of mercury and salvarsan helped blunt the issue of

withholding treatment during the early years, but public health officials had a great deal more difficulty explaining why penicillin was denied in the 1940s. One PHS spokesman ventured that it probably was not "a one-man decision" and added philosophically, "These things seldom are." He called the denial of penicillin treatment in the 1940s "the most critical moral issue about this experiment" and admitted that from the present perspective "one cannot see any reason that they could not have been treated at that time." Another spokesman declared: "I don't know why the decision was made in 1946 not to stop the program."[14]

The thrust of these comments was to shift the responsibility for the Tuskegee Study to the physician who directed the experiment during the 1940s. Without naming anyone, an official told reporters: "Whoever was director of the VD section at that time, in 1946 or 1947, would be the most logical candidate if you had to pin it down." That statement pointed an accusing finger at Dr. John R. Heller, a retired PHS officer who had served as the director of the division of venereal disease between 1943 and 1948. When asked to comment, Dr. Heller declined to accept responsibility for the study and shocked reporters by declaring: "There was nothing in the experiment that was unethical or unscientific."[15]

The current local health officer of Macon County shared this view, telling reporters that he probably would not have given the men penicillin in the 1940s either. He explained this curious devotion to what nineteenth-century physicians would have called "therapeutic nihilism" by emphasizing that penicillin was a new and largely untested drug in the 1940s. Thus, in his opinion, the denial of penicillin was a defensible medical decision.[16]

A CDC spokesman said it was "very dubious" that the participants in the Tuskegee Study would have benefited from penicillin after 1955. In fact, treatment might have done more harm than good. The introduction of vigorous therapy after so many years might lead to allergic drug reactions, he warned. Without debating the ethics of the Tuskegee Study, the CDC spokesman pointed to a generation gap as a reason to refrain from criticizing it. "We are trying to apply 1972 medical treatment standards to those of 1932," cautioned one official. Another officer reminded the public that the study began when attitudes toward treatment and experimentation were much different. "At this point in time," the officer stated, "with our current knowledge of treatment and the disease and the revolutionary change in approach to human experimentation, I don't believe the program would be undertaken."[17]

Journalists tended to accept the argument that the denial of penicillin during the 1940s was the crucial ethical issue. Most did not question the decision to withhold earlier forms of treatment because they apparently accepted the judgment that the cure was as bad as the disease. But a few journalists and editors argued that the Tuskegee Study presented a moral problem long before the men were denied treatments with penicillin. "To say, as did an official of the Centers for Disease Control, that the experiment posed 'a serious moral problem' after penicillin became available is only to address part of the situation," declared the *St. Louis Post-Dispatch*. "The fact is that in an effort to determine from autopsies

what effects syphilis has on the body, the government from the moment the experiment began withheld the best available treatment for a particularly cruel disease. The immorality of the experiment was inherent in its premise."[18]

Viewed in this light, it was predictable that penicillin would not be given to the men. *Time* magazine might decry the failure to administer the drug as "almost beyond belief or human compassion," but along with many other publications it failed to recognize a crucial point. Having made the decision to withhold treatment at the outset, investigators were not likely to experience a moral crisis when a new and improved form of treatment was developed. Their failure to administer penicillin resulted from the initial decision to withhold all treatment. The only valid distinction that can be made between the two acts is that the denial of penicillin held more dire consequences for the men in the study. The *Chicago Sun Times* placed these separate actions in the proper perspective: "Whoever made the decision to withhold penicillin compounded the original immorality of the project."[19]

In their public comments, the CDC spokesmen tried to present the Tuskegee Study as a medical matter involving clinical decisions that may or may not have been valid. The antiseptic quality of their statements left journalists cold, prompting an exasperated North Carolina editor to declare: "Perhaps there are responsible people with heavy consciences about their own or their organizations' roles in this study, but thus far there is an appalling amount of 'So what?' in the comments about it." ABC's Harry Reasoner agreed. On national television, he expressed bewilderment that the PHS could be "only mildly uncomfortable" with an experiment that "used human beings as laboratory animals in a long and inefficient study of how long it takes syphilis to kill someone."[20]

The human dimension dominated the public discussions of the Tuskegee Study. The scientific merits of the experiment, real or imagined, were passed over almost without comment. Not being scientists, the journalists, public officials, and concerned citizens who protested the study did not really care how long it takes syphilis to kill people or what percentages of syphilis victims are fortunate enough to live to ripe old age with the disease. From their perspective the PHS was guilty of playing fast and loose with the lives of these men to indulge scientific curiosity.[21]

Many physicians had a different view. Their letters defending the study appeared in editorial pages across the country, but their most heated counterattacks were delivered in professional journals. The most spirited example was an editorial in the *Southern Medical Journal* by Dr. R. H. Kampmeir of Vanderbilt University's School of Medicine. No admirer of the press, he blasted reporters for their "complete disregard for their abysmal ignorance," and accused them of banging out "anything on their typewriters which will make headlines." As one of the few remaining physicians with experience treating syphilis in the 1930s, Dr. Kampmeir promised to "put this 'tempest in a teapot' into proper historical perspective."[22]

Dr. Kampmeir correctly pointed out that there had been only one experiment dealing with the effects of untreated syphilis prior to the Tuskegee Study. A Nor-

wegian investigator had reviewed the medical records of nearly two thousand untreated syphilitic patients who had been examined at an Oslo clinic between 1891 and 1910. A follow-up had been published in 1929, and that was the state of published medical experimentation on the subject before the Tuskegee Study began. Dr. Kampmeir did not explain why the Oslo Study needed to be repeated.

The Vanderbilt physician repeated the argument that penicillin would not have benefited the men, but he broke new ground by asserting that the men themselves were responsible for the illnesses and deaths they sustained from syphilis. The PHS was not to blame, Dr. Kampmeir explained, because "in our free society, antisyphilis treatment has never been forced." He further reported that many of the men in the study had received some treatment for syphilis down through the years and insisted that others could have secured treatment had they so desired. He admitted that the untreated syphilitics suffered a higher mortality rate than the controls, observing coolly: "This is not surprising. No one has ever implied that syphilis is a benign infection." His failure to discuss the social mandate of physicians to prevent harm and to heal the sick whenever possible seemed to reduce the Hippocratic oath to a solemn obligation not to deny treatment upon demand.[23]

Journalists looked at the Tuskegee Study and reached different conclusions, raising a host of ethical issues. Not since the Nuremberg trials of Nazi scientists had the American people been confronted with a medical *cause célèbre* that captured so many headlines and sparked so much discussion. For many it was a shocking revelation of the potential for scientific abuse in their own country. "That it has happened in this country in our time makes the tragedy more poignant," wrote the editor of the *Philadelphia Inquirer*. Others thought the experiment totally "un-American" and agreed with Senator John Sparkman of Alabama, who denounced it as "absolutely appalling" and "a disgrace to the American concept of justice and humanity." Some despaired of ever again being able to hold their heads high. A resident of the nation's capital asked: "If this is true, how in the name of God can we look others in the eye and say: 'This is a decent country.' "[24]

Perhaps self-doubts such as these would have been less intense if a federal agency had not been responsible for the experiment. No one doubted that private citizens abused one another and had to be restrained from doing so. But the revelation that the Public Health Service had conducted the study was especially distressing. The editor of the *Providence Sunday Journal* admitted that he was shocked by "the flagrant immorality of what occurred under the auspices of the United States Government." A curious reversal of roles seemed to have taken place in Alabama: Instead of protecting its citizens against such experiments, the government was conducting them.[25]

Memories of Nazi Germany haunted some people as the broader implications of the PHS's role in the experiment became apparent. A man in Tennessee reminded health officials in Atlanta that "Adolf Hitler allowed similar degradation of human dignity in inhumane medical experiments on humans living under the

Third Reich," and confessed that he was "much distressed at the comparison." A New York editor had difficulty believing that "such stomach-turning callousness could happen outside the wretched quackeries spawned by Nazi Germany."[26]

The specter of Nazi Germany prompted some Americans to equate the Tuskegee Study with genocide. A civil rights leader in Atlanta, Georgia, charged that the study amounted to "nothing less than an official, premeditated policy of genocide." A student at the Tuskegee Institute agreed. To him, the experiment was "but another act of genocide by whites," an act that "again exposed the nature of whitey: a savage barbarian and a devil."[27]

Most editors stopped short of calling the Tuskegee Study genocide or charging that PHS officials were little better than Nazis. But they were certain that racism played a part in what happened in Alabama. "How condescending and void of credibility are the claims that racial considerations had nothing to do with the fact that 600 [all] of the subjects were black," declared the *Afro-American* of Baltimore, Maryland. That PHS officials had kept straight faces while denying any racial overtones to the experiment prompted the editors of this influential black paper to charge "that there are still federal officials who feel they can do anything where black people are concerned."[28]

The *Los Angeles Times* echoed this view. In deftly chosen words, the editors qualified their accusation that PHS officials had persuaded hundreds of black men to become "human guinea pigs" by adding: "Well, perhaps not quite that [human guinea pigs] because the doctors obviously did not regard their subjects as completely human." A Pennsylvania editor stated that such an experiment "could only happen to blacks." To support this view, the *New Courier* of Pittsburgh implied that American society was so racist that scientists could abuse blacks with impunity.[29]

Other observers thought that social class was the real issue, that poor people, regardless of their race, were the ones in danger. Somehow people from the lower class always seemed to supply a disproportionate share of subjects for scientific research. Their plight, in the words of a North Carolina editor, offered "a reminder that the basic rights of Americans, particularly the poor, the illiterate and the friendless, are still subject to violation in the name of scientific research." To a journalist in Colorado, the Tuskegee Study demonstrated that "the Public Health Service sees the poor, the black, the illiterate and the defenseless in American society as a vast experimental resource for the government." And the *Washington Post* made much the same point when it observed, "There is always a lofty goal in the research work of medicine but too often in the past it has been the bodies of the poor . . . on whom the unholy testing is done."[30]

The problems of poor people in the rural South during the Great Depression troubled the editor of the *Los Angeles Times*, who charged that the men had been "trapped into the program by poverty and ignorance." After all, the incentives for cooperation were meager—physical examinations, hot lunches, and burial stipends. "For such inducements to be attractive, their lives must have been savagely harsh," the editor observed, adding: "This in itself, aside from the ex-

periment, is an affront to decency." Thus, quite apart from the questions it raised about human experimentation, the Tuskegee Study served as a poignant reminder of the plight of the poor.[31]

Yet poverty alone could not explain why the men would cooperate with a study that gave them so little in return for the frightening risks to which it exposed them. A more complete explanation was that the men did not understand what the experiment was about or the dangers to which it exposed them. Many Americans probably agreed with the *Washington Post's* argument that experiments "on human beings are ethically sound if the guinea pigs are fully informed of the facts and danger." But despite the assurances of PHS spokesmen that informed consent had been obtained, the Tuskegee Study precipitated accusations that somehow the men had either been tricked into cooperating or were incapable of giving informed consent.[32]

An Alabama newspaper, the *Birmingham News,* was not impressed by the claim that the participants were all volunteers, stating that "the majority of them were no better than semi-literate and probably didn't know what was really going on." The real reason they had been chosen, a Colorado journalist argued, was that they were "poor, illiterate, and completely at the mercy of the 'benevolent' Public Health Service." And a North Carolina editor denounced "the practice of coercing or tricking human beings into taking part in such experiments."[33]

The ultimate lesson that many Americans saw in the Tuskegee Study was the need to protect society from scientific pursuits that ignored human values. The most eloquent expression of this view appeared in the *Atlanta Constitution.* "Sometimes, with the best of intentions, scientists and public officials and others involved in working for the benefit of us all, forget that people are people," began the editor. "They concentrate so totally on plans and programs, experiments, statistics—on abstractions—that people become objects, symbols on paper, figures in a mathematical formula, or impersonal 'subjects' in a scientific study." This was the scientific blindspot to ethical issues that was responsible for the Tuskegee Study—what the *Constitution* called "a moral astigmatism that saw these black sufferers simply as 'subjects' in a study, not as human beings." Scientific investigators had to learn that "moral judgment should always be a part of any human endeavor," including "the dispassionate scientific search for knowledge."[34]

Many editors attributed the moral insensitivity of PHS officers to the fact that they were bureaucrats, as well as scientists. Distrust of the federal government led a Connecticut editor to charge that the experiment stemmed from "a moral breakdown brought about by a mindless bureaucracy going through repeated motions without ever stopping to examine the reason, cause and effects." To a North Carolina editor, the experiment had simply "rolled along of its own inhuman momentum with no one bothering to say, 'Stop, in the name of human decency.' " In a sense, then, the government's scientific community itself became a casualty of the Tuskegee Study.

NOTES

1. *New York Times,* July 26, 1972, pp. 1, 8.
2. Because of the high rate of geographic mobility among the men, estimates of the mortality rate were confusing, even in the published articles. PHS spokesmen in 1972 were reluctant to be pinned down on an exact figure. An excellent example is the Interview of Dr. David Sencer by J. Andrew Liscomb and Bobby Doctor for the U.S. Commission on Civil Rights, Alabama State Advisory Committee, September 22, 1972, unpublished manuscript, p. 9. For the calculations behind the figures used here, see *Atlanta Constitution,* September 12, 1972, p. 2A.
3. During this primary stage the infected person often remains seronegative: A blood test will not reveal the disease. But chancres can be differentiated from other ulcers by a dark field examination, a laboratory test in which a microscope equipped with a special indirect lighting attachment can view the silvery spirochetes moving against a dark background.
4. At the secondary stage a blood test is an effective diagnostic tool.
5. Dr. Donald W. Prinz quoted in *Atlanta Journal,* July 27, 1972, p. 2; *Birmingham News,* July 27, 1972, p. 2.
6. *New York Times,* July 27, 1972, p. 18.
7. Dr. Ralph Henderson quoted in ibid.; *Tuskegee News,* July 27, 1972, p. 1.
8. *New York Times,* July 27, 1972, p. 2.
9. Eunice Rivers, Stanley Schuman, Lloyd Simpson, Sidney Olansky, "Twenty Years of Followup Experience in a Long-Range Medical Study," *Public Health Reports* 68 (April 1953): pp. 391–95. (Hereafter Rivers et al.)
10. Ibid., p. 393.
11. Dr. John D. Millar quoted in *Birmingham News,* July 27, 1972, pp. 1, 4; *Atlanta Journal,* July 27, 1972, p. 2.
12. Prinz quoted in *Atlanta Journal,* July 27, 1972, p. 2.
13. Millar quoted in *Montgomery Advertiser,* July 26, 1972, p. 1.
14. Ibid.; Prinz quoted in *Atlanta Journal,* July 27, 1972, p. 2.
15. Millar quoted in *Montgomery Advertiser,* July 26, 1972, p. 1; *New York Times,* July 28, 1972, p. 29.
16. Dr. Edward Lammons quoted in *Tuskegee News,* August 3, 1972, p. 1.
17. Prinz quoted in *Atlanta Journal,* July 27, 1972, p. 2; Millar quoted in *Montgomery Advertiser,* July 26, 1972, p. 1.
18. *St. Louis Dispatch,* July 30, 1972, p. 2D.
19. *Time,* August 7, 1972, p. 54; *Chicago Sun Times,* July 29, 1972, p. 23.
20. *News and Observer,* Raleigh, North Carolina, August 1, 1972, p. 4; ABC Evening News, August 1, 1972.
21. Their reactions can be captured at a glance by citing a few of the legends that introduced newspaper articles and editorials that appeared on the experiment. The *Houston Chronicle* called it "A Violation of Human Dignity" (August 5, 1972, section I. p. 12); *St. Louis Post-Dispatch,* "An Immoral Study" (July 30, 1972, p. 2D); *Oregonian,* an "Inhuman Experiment" (Portland, Oregon, July 31, 1972, p. 16); *Chattanooga Times,* a "Blot of Inhumanity" (July 28, 1972, p. 16); *South Bend Tribune,* a "Cruel Experiment" (July 29, 1972, p. 6); *New Haven Register,* "A Shocking Medical Experiment" (July 29, 1972, p. 14); and Virginia's *Richmond Times Dispatch* thought that "appalling" was the best adjective to describe an experiment that had used "Humans as Guinea Pigs" (August 6, 1972, p. 6H). To the *Los Angeles Times* the study represented "Official Inhumanity" (July 27, 1972, part II, p. 6); to the *Providence Sunday Journal,* a "Horror Story" (July 30, 1972, p. 2G); and to the *News and Observer* in Raleigh, North Carolina, a "Nightmare Experiment"

(July 28, 1972, p. 4). The *St. Petersburg Times* in Florida voiced cynicism, entitling its editorial "Health Service?" (July 27, 1972, p. 24), while the *Milwaukee Journal* made its point more directly by introducing its article with the legend "They Helped Men Die" (July 27, 1972, p. 15).

22. R. H. Kampmeir, "The Tuskegee Study of Untreated Syphilis," *Southern Medical Journal* 65 (1972): pp. 1247–51.

23. Ibid., p. 1250.

24. *Philadelphia Inquirer,* July 30, 1972, p. 4H; *Montgomery Advertiser,* August 12, 1972, p. 13; letter to the editor signed A. B., *Evening Star,* Washington, D.C., August 10, 1972, p. 18A; for examples of a similar reaction, see the *Gazette,* Charleston, West Virginia, July 30, 1972, p. 2D, and Salley E. Clapp to Dr. Merlin K. Duval, July 26, 1972, Tuskegee Files, Centers for Disease Control, Atlanta, Georgia. (Hereafter TF-CDC).

25. *Providence Sunday Journal,* July 30, 1972, p. 2G; for the same view, see *Evening Sun,* Baltimore, Maryland, July 26, 1972, p. 26A.

26. Roderick Clark Posey to Millar, July 27, 1972, TF-CDC; *Daily News,* July 27, 1972, p. 63; see also *Milwaukee Journal,* July 27, 1972, p. 15; *Oregonian,* July 31, 1972, p. 16; and Jack Slater, "Condemned to Die for Science," *Ebony* 28 (November 1972), p. 180.

27. *Atlanta Journal,* July 27, 1972, p. 2; *Campus Digest,* October 6, 1972, p. 4.

28. *Afro-American,* August 12, 1972, p. 4. For extended discussions of the race issue, see Slater, "Condemned to Die," p. 191, and the three-part series by Warren Brown in *Jet* 43, "The Tuskegee Study," November 9, 1972, pp. 12–17, November 16, 1972, pp. 20–26, and, especially, November 23, 1972, pp. 26–31.

29. *Los Angeles Times,* July 27, 1972, part II, p. 6; *New Courier* also stated, "No other minority group in this country would have been used as 'Human Guinea Pigs,' " and explained, "because those who are responsible knew that they could do this to Negroes and nothing would be done to them if it became known," August 19, 1972, p. 6.

30. *Greensboro Daily News,* August 2, 1972, p. 6; *Gazette-Telegraph,* Colorado Springs, August 3, 1972, p. 8A; *Washington Post,* July 31, 1972, p. 20A. See also *Arkansas Gazette,* July 29, 1972, p. 4A.

31. *Los Angeles Times,* July 27, 1972, p. 20A.

32. *Washington Post,* July 31, 1972, p. 20A.

33. *Birmingham News,* July 28, 1972, p. 12; *Gazette-Telegraph,* August 3, 1972, p. 8A; *Greensboro Daily News,* August 2, 1972, p. 6A.

34. *Atlanta Constitution,* July 27, 1972, p. 4A.