

Prisoners and Pellagra

JON M. HARKNESS, PhD

On October 30, 1915, Public Health Service physician Joseph Goldberger wrote with satisfaction to his wife that after feeding 11 inmates in a Mississippi prison a restricted version of the standard southern diet he had produced pellagra in five "great big, vigorous men."

Two days later, Dr. Goldberger announced his results to the press, making the sensationally simple claim that an "unbalanced diet" caused pellagra, the cruel affliction that begins with skin eruptions and ends with mental deterioration and death. Pellagra had been devastating the American South with growing ferocity for a decade.

In 1915, the Mississippi State Board of Health captured the nature of the medical crisis by reporting that during the previous year, pellagra had "caused more deaths than typhoid fever, smallpox, measles, scarlet fever, influenza, epidemic cerebrospinal meningitis, and acute poliomyelitis combined."

In linking pellagra to a faulty diet (later identified by other researchers as a niacin deficiency), Goldberger dramatically swept aside the common belief that this was but another infectious disease whose etiology would be unraveled by microbiology. With some noteworthy exceptions, early 20th-century members of the medical community and the general public greeted news of Goldberger's work on pellagra with great excitement.

On learning of the prison experiment, Reid Hunt of Harvard Medical School immediately suggested that Goldberger's accomplishment might be worthy of a Nobel Prize. The edi-

tors of Mississippi's leading newspaper, the *Jackson Daily News*, declared the experiment "the foremost development [in] medical science within the past decade." The *News* went on to muse that it was "not improbable" that Goldberger's next achievement would be "to find the cause and cure of that other dread disease, cancer." Two months later, *Scientific American* termed Goldberger's prison experiment "epoch-making."

The luster of Goldberger's feat has not faded with the passage of decades. Well-known epidemiologist Milton Terris, writing in 1964, called Goldberger's work on pellagra "the American classic of epidemiology." Even more recently, Fitzhugh Mullan of the Public Health Service (PHS), in his 1989 history of the PHS, *Plagues and Politics*, identified Goldberger as the agency's "best known" field scientist because of his "spectacular success" with pellagra.

Thus the use of American prisoners in nontherapeutic medical experimentation began with a triumph. Experimentation behind bars took firm root during World War II and grew with great gusto in the immediate postwar years. But Dr. Goldberger planted the seeds of the practice in this country with his 1915 pellagra study.

Conception and Organization

Goldberger decided in late 1914 that he needed some human subjects for an experiment that he believed would confirm with certainty a hypothesis that pellagra was a disease of dietary deficiency. Early in investigative wanderings through the pellagra-ridden South, Goldberger started to focus on a dietary cause for the disease.

He had arrived at his hypothesis after observations on the incidence of pellagra in Southern insane asylums and orphanages—and after achieving some success with a dietary cure of the



Earl Brewer, Governor of Mississippi, 1912–1916, who paved the way for Goldberger's pellagra experiment by promising pardons to convicts who participated. (Photo courtesy New Orleans Times Picayune)

pellagrins (as those afflicted were called) he found in some of these institutions. By the end of 1914, he had become convinced that the monotonous "three-M" diet (meat fat, meal, and molasses) of poor people in the South was the source of pellagra's devastation in Dixie.

To test his unconventional theory, Goldberger decided that he needed to induce pellagra by feeding some healthy people traditional southern fare. In his previous travels, he had noticed that pellagra was absent at the Rankin Prison Farm, which rested in a virtual sea of pellagra just outside Jackson, the capital city of Mississippi. This made it the perfect setting for the experiment he had in mind.

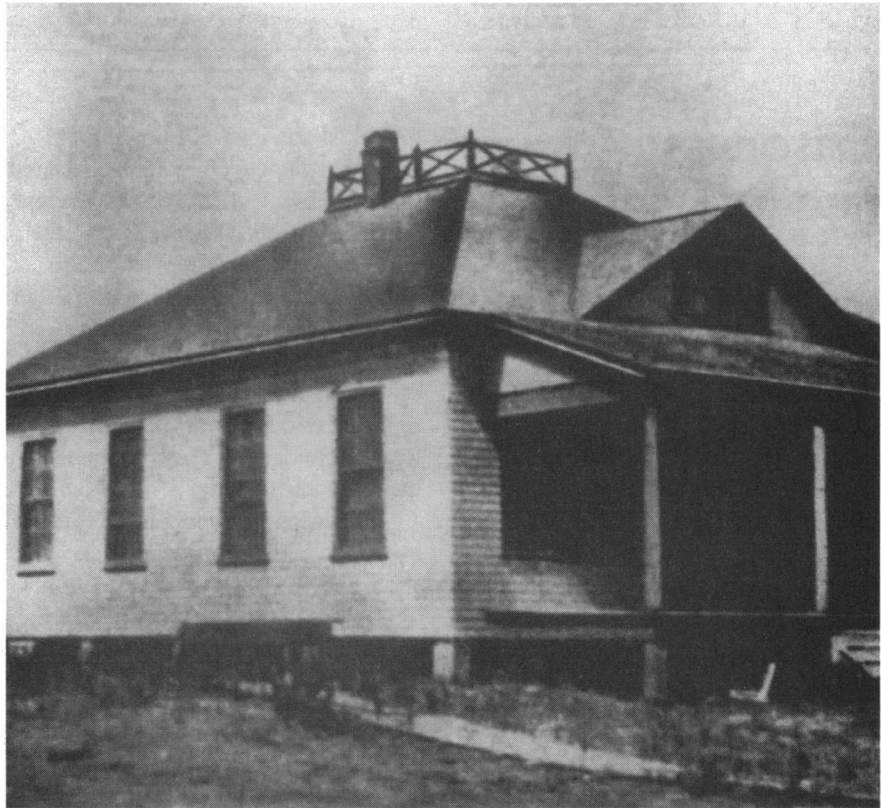
Experimental precedents. Goldberger left no record explicitly indicating how he arrived at the idea of using prisoners in this experiment. He might have drawn on some isolated precedents, however. Most significantly, Richard P.

Strong, an American scientist based in the Philippines during the early years of the 20th century, used condemned Filipino prisoners in two experiments—a study of a cholera vaccine in 1906 and another on the etiology of beriberi in 1912. Strong designed the 1912 experiment to demonstrate that beriberi is not an infectious disease (as many believed) but rather a disease of dietary deficiency. Strong succeeded in the demonstration, establishing that a diet consisting primarily of polished white rice would cause beriberi. Six of the prisoners in his experiment exhibited symptoms of beriberi and four (one of whom died during the study) developed full-blown cases of the disease.

In an early report on his pellagra work, Goldberger acknowledged that “recent advances in our knowledge of beriberi” played a significant role in suggesting the possibility that pellagra “was dependent upon a diet that was for some reason faulty.” Although Goldberger never cited Strong by name, it seems clear from this passage that Strong’s work on beriberi had influenced Goldberger’s construction of a causative hypothesis for pellagra. It also seems likely that Goldberger drew inspiration from Strong in turning to prisoners as subjects for his own *experimentum crucis* with pellagra.

Getting approval. From his earliest thinking, Goldberger seems to have had a bargain in mind for long-term convicts—the risk of contracting a disease in exchange for the promise of freedom. To implement this plan, Goldberger clearly understood that he would need to gain the approval of Mississippi state officials. In particular, Goldberger knew that he required the cooperation of Mississippi Governor Earl Brewer.

In January 1915, Goldberger embarked on a series of negotiations with Brewer, which he characterized in a letter to his wife as “time-consuming and demand[ing] a heap of patience.” Most fundamentally,



Rankin Prison Farm’s so-called New Hospital, in which the members of the “Pellagra Squad” were housed during the experiment. (Photo courtesy New Orleans Times Picayune)

Brewer was concerned that some of the prisoners might die, leaving him implicated in what could be construed as murder. But Goldberger assured Brewer that he could quickly bring back to health anyone who became gravely ill, offering as proof his success in curing some pellagrins at two local orphanages. After discussing the proposal with his key lieutenants, Brewer finally decided to go along with the request.

Brewer announced to the 80 or so convicts at the Rankin Prison Farm that a pardon could be obtained by agreeing to submit to a diet consisting of white flour, corn meal, hominy grits, cornstarch, white rice, cane sugar, cane syrup, sweet potatoes, pork fat, cabbage, collards, turnips, turnip greens, and coffee (and lacking milk, lean meat, eggs, and legumes). According to a press report published at the conclusion of the test, Brewer and Goldberger were concerned that

the prospective participants should be well informed. “They presented the matter frankly to the prisoners, telling them just what they would have to undergo.... There was no effort to minimize the grave physical risk.”

There is no record that anyone involved in the organization of the experiment considered the coercive value of a pardon—with one minor exception. In a letter Goldberger wrote to his wife in the midst of the test, he put quotation marks around the word “volunteers” when referring to the participants in the study. Perhaps he meant this to signal that he used the word as a matter of convenience rather than as a representation of reality. Nevertheless, the very subtlety of this solitary clue testifies to the insignificance of this moral obstacle for the organizers of the test.

The offer of a pardon unquestionably played a large role in the thinking of prisoners at the Rankin Farm. Vol-

unteers for the experiment stepped forward in abundance; for many it seemed like the first stride in what might be a relatively easy stroll to freedom. Looking back from 1933, Governor Brewer recounted an exchange he had had with a prospective participant: "I asked him if he would submit to the test and read off the diet list. 'Gov, I'm eating that diet now,' he said, 'Sure I'll do it.'"

Selection of participants. From an excess of volunteers, Brewer chose 12, half of whom were murderers serving life terms and all of whom were white. Given the attention focused on the use of African Americans in human experimentation since the 1972 uncovering of the Tuskegee Syphilis Study, some might expect that Brewer would have chosen black prisoners. But Brewer was, to some degree at least, only following Goldberger's preferences. Goldberger offered two reasons for his desire to have white men in the pellagra study.

In a synopsis of the experiment published less than two weeks after its conclusion in *Public Health Reports*, Goldberger explained that "white adult males were selected because, judged by the incidence in the population at large, these would seem to be least susceptible to the disease." In other words, Goldberger believed that inducing pellagra in white men would offer the strongest possible proof for his hypothesis.

The other technical explanation for the selection of white men for the experiment appeared in a newspaper account. An article in the *Jackson Daily News* on November 2, 1915, acknowledged that "the disease exists in both races," but the newspaper suggested that "Dr. Goldberger wanted white persons" because the disease "is easier of diagnosis, and more unmistakable in its symptoms, among Caucasians." The article seems to suggest that lighter skin would reveal the telltale eruptions of pellagra with greater clarity than dark skin.

The fact that other early 20th-century experiments with prisoners that I

have examined were conducted almost exclusively on whites and that whites continued to predominate in prison-based medical research for the next several decades suggests a more general and subtle explanation for racial preference in the selection of prisoners for the pellagra test. In the insular world of American prisons, both the keepers and the kept have almost always viewed participation in medical experiments (and the related rewards) as a privilege reserved for those sitting near the top of an institution's social ladder. In my doctoral dissertation (University of Wisconsin, 1996) I argued at some length that racism behind bars combined with the extremely limited opportunities enjoyed by prisoners produced an overrepresentation of whites in prison medical research.

The experiment. The opening phase of the experiment finally got under way on February 4, 1915. The participants were segregated from the rest of the prisoners and housed in Rankin's "New Hospital" under the watchful eye of Goldberger's onsite assistant, G. A. Wheeler, a junior officer in the Public Health Service. After several weeks, Goldberger and Wheeler agreed to shorten the planned three-month preliminary period because of the "growing impatience of the volunteers to begin and to get through with their ordeal." On April 19, roughly two weeks ahead of schedule, the prisoners began subsisting on the experimental diet.

Those included in the creation and implementation of the experimental



Joseph Goldberger's prison experiment was touted in its day as "epoch-making" and worthy of a Nobel Prize, yet viewed with today's sensibilities it might be found coercive.

plan, most prominently Goldberger and Brewer, attempted to shroud the experiment in secrecy, seemingly motivated by a belief that members of the public would react with disapproval if they learned that prisoners were being used in such a way. But the objections that Goldberger and Brewer had been guarding against did not prove to be significant in the flurry of publicity that surrounded the successful conclusion of the pellagra experiment.

Criticism and praise. One published attack on the experiment was launched under the banner of the organized antivivisection movement of the era. As historian Susan Lederer of the Pennsylvania State University College of Medicine has found, Diana Belais, a leader in this movement, trumpeted in an antivivisection periodical that "the men were compelled to submit to vivisection."

tion, to be made the victim[s] of a distressing disease to gain their liberty, with the chance, of course, of dying under the ordeal that would be inflicted upon them." But a storm of ethical criticism surrounding Goldberger's prison pellagra study never gathered force. I have found no other published criticism of the experiment on the grounds of exploitation or coercion.

The possibility of coercion does not even seem to have occurred to most popular-press commentators on the experiment. A stark example is offered in the closing sentence of an article appearing in the *Jackson* [MS] *Daily Clarion-Ledger* two days after the test's conclusion. The passage contains what most present-day ethicists would consider an obvious contradiction:

When the pellagra squad was made up[,] no persuasion was used to get members, four times the number needed volunteering, most of them life termers who were willing to take a chance with the loathsome disease rather than spend the remainder of their days on the State farms.

With regard to experimental exploitation of the prisoners, Governor Brewer, a cunning politician, had to perform some publicity stunts to quell almost the exact opposite of the public response he had apparently expected. With news of the test leaking, Brewer began to receive complaints about the impending early release of convicted felons who were *merely* participating in an experiment. Public accusations of leniency—clearly based on the popular notion that prisons should, above all, be places of punishment—started with some letters from prominent citizens of Itta Benna, Mississippi.

Itta Benna was the hometown of Guy R. James, a member of the pellagra squad who had been serving a life

sentence for murder. W. H. Rucker, editor of the *Itta Benna Times*, wrote with particular force to Brewer six weeks before the conclusion of the experiment:

It is understood here you will soon be asked to pardon G. R. James who was sent to the penitentiary for life from this county.... As this is considered one of the worst murder cases the county ever had...there is much opposition [sic] to a pardon for Mr. James at this place.... If he deserves a pardon there are none deserving of punishment... I am hoping you will not do this community a wrong by granting the pardon.

The possibility of coercion does not even seem to have occurred to most popular-press commentators on the experiment.

Brewer vividly recalled this as the most significant form of public objection to the experiment, stating in a newspaper interview published almost two decades after the episode that he "caught plenty of trouble when all those pardons were revealed at once." In an effort to defuse criticism, Brewer allowed his letter in response to Rucker to be reprinted in the *Jackson Daily News* article that announced the conclusion of the experiment and the pardon of the prisoners. In this letter,

Brewer played with the truth to accentuate, even exaggerate, the trauma of the prisoners' experimental ordeal; in essence, he wanted to make participation in the pellagra test seem like a *stiffer* penalty than spending a lifetime in prison:

I have had a number of these convicts who were serving life sentences beg and plead with me to let them go back...and serve their life sentences and get out of this awful test. Among them is Guy James. I have a letter from him in which he begged and implored me to let him quit the test several months ago and go back and serve his life sentence.

In fact, Brewer had received some letters from Guy James in the midst of the pellagra experiment (these letters are now housed in the Mississippi State Archives). The letters reveal that James had *not* asked to return to prison for life. Instead, he pleaded for early release from the experiment *and* prison. James believed that the test was a dangerous farce, and he listed a pitiable set of reasons why he was needed immediately at home. Fortunately for Goldberger, Brewer did not accede to James's begging; James was one of those whose pellagra would be most clearly manifest at the end of the experiment.

On the afternoon of November 1, 1915, James and the other members of the pellagra squad did finally receive their reward. A reporter from the *Jackson Daily News* described a dramatic scene in Governor Brewer's office:

The eleven men, still clad in prison stripes, entered to receive the precious papers that would restore them to liberty. They were all pale, weak and emaciated, two or three... being scarcely able to walk....

Tears were streaming down the cheeks of nearly every man as he stepped up to the governor's desk to receive his pardon.

The squad...then marched out of the office and...each was given a suit of civilian clothing and \$5 in money.

As described earlier, many of Goldberger's medical contemporaries reacted to the news of his experiment with great enthusiasm. But the medical profession was not unanimous in its praise for Goldberger's efforts. At an annual meeting of the Southern Medical Association in Dallas, held only a week after the conclusion of the Rankin experiment, some physicians in attendance who were staunchly committed to the idea of pellagra as an infectious disease questioned the validity of Goldberger's work. W. J. MacNeal of the privately endowed Thompson-McFadden Pellagra Commission wrote a scathing letter that appeared in the *Journal of the American Medical Association*. MacNeal questioned, in particular, the propriety of relying on scrotal lesions as definitive symptoms of pellagra in the Rankin experiment.

Years later, Goldberger's widow recalled in an unpublished manuscript entitled, "Science Pigeonholed—Pellagra," (in the Mississippi State Archives) that

Even after this dramatic experiment [at Rankin]...some men of science, were still unconvinced that pellagra was due alone to a deficient diet.

Doctor Goldberger was badgered with verbal brickbats and harangued by the doctors. One noted local physician in Birmingham spoke openly of Goldberger's "half-baked experiments," and a professor of medicine at Columbia University...accused him of faking his prison experiment.

A few of Goldberger's medical brethren did criticize the experiment on "ethical" grounds. This criticism was not targeted at the manner in which Goldberger chose to conduct his study. Instead, these critics ques-

tioned Goldberger's decision to report his results first in newspapers rather than in a medical journal.

Rebuttal. In the spring of 1916, Goldberger responded to his most vocal medical critics, who continued to assert that pellagra was really an infectious disease, by organizing a series of experiments, which the participants labeled "filth parties."

Goldberger and several of his closest associates (including his wife, Mary, and G. A. Wheeler) subjected themselves to injections, ingestions, and inhalations of blood, feces, urine, nasal secretions, and skin scrapings from patients with active cases of pellagra. The participants experienced limited physical (and, no doubt, some psychological) discomfort, but all escaped their ordeal without contracting pellagra. These experiments—and, perhaps more significantly, the passage of time—have served to reinforce Goldberger's enthusiastic claim that his prison study provided the right answer to the puzzle of pellagra.

Conclusion

The successful result of Goldberger's research at Rankin Prison Farm does not represent the entire legacy of his experiment; the organization of the research within the walls of a prison proved to be pattern-setting. The use of prisoners as subjects in nontherapeutic medical experiments continued in this country well into the 1970s, and later proponents of prison experimentation frequently cited the example of Goldberger's pellagra work as one of the outstanding benefits of medical research behind bars. By mid-century, American researchers had abandoned the explicit use of pardons as rewards for scientific service, but many other features of Goldberger's prison experiment, including his relatively careful attention to informing prospective participants of the risks associated with the test, continued to characterize most prison-based experiments in this country.

The long tradition came to an end

when, beginning in the early 1970s, critics started to focus on the potential for coercion and exploitation in experimenting with captive research subjects. In the wake of the Attica prison riot of 1971 and the general social upheaval of the period, more Americans began to worry that the authoritarian prison structure—which Goldberger and other medical researchers had found so useful in conducting controlled human experiments—made meaningful consent to participate in research all but impossible.

Also, the public revelation of the Tuskegee Syphilis Study in 1972 served to ratchet the level of public concern over human experimentation to a new plane. Even though the Tuskegee Study did not involve prisoners, the controversy spilled over into the use of prisoners as research subjects, especially because many critics of prison experimentation began to assert (incorrectly) that African Americans were the most common subjects of medical research in prisons. For better or worse, American researchers have been forced to find other people in their effort to carry on the work to which Joseph Goldberger dedicated his life: investigating, preventing, and curing the diseases that afflict human beings.

Dr. Harkness is Managing Editor of *Isis*, the journal of the History of Science Society, and Visiting Scholar in the Department of Science and Technology Studies at Cornell University. This article is derived from his doctoral thesis at the University of Wisconsin—Madison (1996) and a paper he delivered at the 1993 meeting of the American Association for the History of Medicine.

Address correspondence to Dr. Harkness, Department of Science and Technology Studies, Cornell University, 726 University Ave., Ithaca, NY 14850; tel. 607-254-4747; fax 607-255-0616; e-mail <jmh17@cornell.edu>.