

MEDICINE

# A Depression Without Its Disease

## The Hard-Times Affliction, Pellagra, Has At Last Been Successfully Combated Through Use of the P-P Factor

By JANE STAFFORD

**F**OR the first time in history, the southern states have gone through a period of economic depression without the usual epidemic of pellagra, hard-times disease of other moneyless periods.

Is this because one hardworking, self-sacrificing disease-fighter, Joseph Goldberger, found that pellagra could be prevented and cured by proper diet?

Yeast and vegetable gardens seem to have routed pellagra, but Dr. Goldberger is not here to see the triumph of his teachings. To be sure, not all scientists have accepted his teachings. The last chapter on pellagra may not have been written yet. But whether or not his explanation of pellagra was sound, his advice about it seems to have worked.

Dr. Goldberger's story starts in Hungary, where he was born on July 16, 1874. He spent the first years of his life on his parents' farm south of the Carpathian Mountains. When he was six his parents brought him to America. He grew up in New York's lower East Side where his father had a grocery store.

Perhaps it was there that he learned to know human nature so well that he thought to notice whether the nurses in a state hospital gave themselves better food than their helpless patients, whether the big boys in the orphan asylums got more to eat than the younger, weaker ones. Because it was from such tiny clues that he found the solution of the pellagra problem, so that poor folks in the South, never so poor as they have been recently, are free from the pain and the worry of pellagra.

### Tables Turned

Just twenty years after his arrival in the Promised Land to which he was to contribute so much, the young Dr. Goldberger found himself examining immigrants at Ellis Island. This was his first work for the U. S. Public Health Service, to which he had been appointed soon after leaving medical school. You can imagine how proud and thankful

he must have felt when, in his bright new uniform, he walked down the line of immigrants and remembered himself as a six-year-old lad, twenty years before, waiting in that same line while an imposing uniformed official scrutinized and questioned each one.

His unusual qualifications for research work were soon recognized, and in 1904 he was ordered to the Hygienic Laboratory, now the U. S. National Institute of Health, in Washington, where Uncle Sam's disease fighters have their headquarters.

By this time the first case of pellagra had been reported in the United States. During the years that followed, while Dr. Goldberger was solving special questions concerning diphtheria and measles and other diseases, pellagra was becoming more and more of a problem. At times it seriously interfered with farming and industrial work in certain parts of the country.

### Was Spreading Rapidly

One of the field workers of the U. S. Public Health Service, Dr. C. H. Lavinder, had reported: "Like a mushroom, pellagra is coming up overnight, spreading everywhere." It was reported to be driving people crazy and killing them.

Back in Washington, the chiefs of Uncle Sam's disease-fighting corps held a conference and the upshot of it was that Dr. Goldberger was assigned to investigate and, if possible, to find a way to control pellagra.

He did not know a thing about pellagra, and another man in his position might well have been dismayed. But not Dr. Goldberger. Characteristically he set to work. First, he got every book that said anything about the disease, every report that had been written on it. He read them all and studied them well. Then he went out into the field.

The story of his wanderings through the South, his poking into orphanages and prisons and asylums, is one of the most dramatic chapters of public health history. He went to the towns where so many of the mill hands had the dis-



DR. JOSEPH GOLDBERGER

### Pioneers of Medicine

The accompanying article is the first of a series describing the romantic experiences of those who have contributed to the great battle against disease and suffering. This story of an immigrant boy who discovered a preventive of the dread scourge of the poverty-stricken will be followed by others recounting the principal attacks on other American plagues.

ease that sometimes the mills could not be kept running. He went to the farming villages and saw more of the poor, sick pellagrins in every stage of the disease. He found that "the fully developed disease makes a picture which, when once seen, can hardly ever fail to be recognized even by one who is not a physician."

The eruption is the most characteristic telltale of the disease. When this rash first shows itself it looks very much like sunburn and frequently was mistaken for it. The sunburned appearance soon changes and in many cases the reddened skin turns to a somewhat dirty brown, often looking like dried old parchment. Then the skin becomes rough and scaly or cracks and peels. An odd thing about this eruption is that its favorite

places are the backs of the hands, forearms, and backs of the feet. Another odd thing is that if the back of one hand or one cheek is affected, the same place on the other hand or cheek will soon have the same-sized spot of dirty, red-brown rash.

After the rash has appeared, the patient begins to feel tired, "worked out," and has indigestion, is nervous and dizzy. Pains in his muscles and bones keep him awake, and he has a burning, scalded feeling of the tongue and mouth. Many died of the disease, and some had their minds affected, so that the poor patients had to be put away in asylums.

### Watching the Trays

Here in the asylums, Dr. Goldberger got his first clue to the cause of the disease, and to a method of prevention and treatment. Some of the best scientists at that time thought pellagra was contagious, but how could that be? questioned Dr. Goldberger. None of the nurses or doctors or attendants, even in asylums where patients in the last, worst stages had to be cared for, ever got the disease from their patients, he was assured. Some doctors held that it came from eating bad food, so Dr. Goldberger next inquired what the patients ate. He was told the food for patients and

staff was all the same. But in the dining room, he watched the meals served, and his quick eye saw the glass of milk and portion of fresh meat by which a nurse's tray differed from her patient's.

He kept this clue in mind when he visited an orphan asylum, where every spring pellagra attacked the roustabout children between six and twelve years old. Why just this group? he wondered. He watched closely in the dining room again. Sure enough, their food was different. This roustabout group were too big for babies' milk, and too small to earn meat by doing chores, so they got neither, and they were the ones that were afflicted with the red rash and sore mouths and tired feelings of pellagra.

Then he tried his first experiment. He gave these roustabout children fresh milk to drink every day, and a generous helping of fresh, lean meat, either beef, veal or mutton, with their dinners. The roustabouts ate this new diet all winter and in spring not one of them had the least bit of rash or any other sign of pellagra, though a few, at least, had always suffered from it every spring in the past.

### Grits and "Fat Back"

Meanwhile, Dr. Goldberger had gone back to the mill villages and the farm

towns and asked the people, especially the pellagra sufferers, what they ate. Biscuits, corn bread, grits, gravy, syrup and collards, chiefly. Little or no milk, no meat except "sow back" or fat salt pork. Sometimes the pellagra sufferers had had a more varied diet, but Dr. Goldberger found that these patients were finicky eaters, and only nibbled at the food that might have prevented their attack of pellagra.

The disease always appeared first in the spring, lasted into the summer, but if the patients lived, they got better in the fall. That was because the summer brought a more varied diet with vegetables, eggs and maybe a little more fresh meat and milk, he was sure.

### Convicts Volunteer

With all these facts in mind, Dr. Goldberger undertook his next feeding experiment. Twelve convicts, on the offer of pardon and medical attention if they became ill, volunteered to take part in it. Their bill of fare consisted of the same unappetizing, monotonous food that the poor whites of the South lived on during financial depressions and got pellagra from, in Dr. Goldberger's opinion. The controls, mostly officials of the Rankin Prison Farm of the Mississippi State Penitentiary, where the experiment was made, were given the same menu with the addition of milk, butter, lean meat and eggs. Of the eleven volunteers (one had to be dropped because he developed another disease early in the experiment) six developed pellagra while all of the controls remained in good health.

### Exposed Himself

But even this experiment failed to convince the other scientists of the world. The germ theory of the disease was still held by many eminent men. So Dr. Goldberger tried, seven times, to give himself the disease in any of the many ways that germ diseases can be transmitted. He injected blood and material from the sore skins of dying pellagrins into his arm and into the arms of his wife and loyal colleagues. He and some of the others swallowed pills made of the intestinal discharges of these dying pellagrins. The whole world expected them to get pellagra and die, but they did not.

However, Dr. Goldberger was not satisfied. He wanted to stop the ravages of this horrible disease and he was a practical man. He realized that fresh meat and milk were beyond the reach of



### MILK PROTECTS THEM

*No pellagra for these "roustabouts" who are getting fresh milk from the Red Cross for their school lunch — it was the roustabouts in a Southern orphanage, where milk was reserved for the babies and meat for the big boys doing chores, who suffered from pellagra each year and whose diet gave Dr. Goldberger the first clue to the cause.*

the poverty-stricken inhabitants of the South.

He came back to Washington, to his old quarters in the Hygienic Laboratory, wondering how he was going to find a cheap food that would prevent pellagra. Then at just the crucial moment, he heard of some experiments that had been going on at Yale University. The Yale investigators had been trying to find the effect of meatless diets on dogs. What they found was that their dogs got sick, had very sore mouths, and died of a disease called black-tongue which was very much like pellagra in human beings.

#### Experimental Animals

This gave Dr. Goldberger just what he needed—a handy way of studying the pellagra-preventing value of various foods. If, as he soon found to be the case, black-tongue disease of dogs is the same as human pellagra, the foods that cure the dogs of black-tongue will cure pellagra too.

He found the pellagra preventive, which he called P-P factor, in a number of vegetables and milk, butter, lean fresh meat and eggs. Finally, he discovered it in yeast, just in time to save the lives of the victims of the Mississippi flood in 1927. A small amount of this cheap stuff, either fresh or dried, will cure or prevent pellagra. Even the poorest folks, who cannot buy milk or fresh meat, can pay three cents a day for the yeast that will protect them from pellagra.

#### Death Cut Short Work

In the midst of his investigations on the pellagra-preventive factor of foods, Dr. Goldberger was called on to make his last fight against disease. Although he had risked his life many times before, disease came uncourted this time, and death followed despite all the efforts of fellow scientists and his colleagues of the U. S. Public Health Service. On January 17, 1929, he died at the Naval Hospital in Washington, a victim, not of any disease he had investigated, but of a tumor of the kidney.

So he did not live to see pellagra routed during the worst depression in history, as a result of his discoveries and research. For while all scientists are not yet convinced that pellagra results from lack of a certain vitamin, as he thought, the Red Cross has heeded his teachings. When the first effects of the present depression became apparent, the Red Cross started distributing yeast to the poor people in the South



#### SUFFERING

*This patient not only has on his hands the symmetrical pellagra rash, but, judging from his expression, is also suffering from the mental depression which is a striking feature of pellagra—the victims of this disease are sometimes so affected mentally that they have to be confined in hospitals for mental disease.*

and encouraged and helped them to plant vegetable gardens and to can the surplus vegetables for the winter's use.

There has been no devastating epidemic of pellagra during this depression, in fact, the pellagra death-rate has been reduced by about one-third. Regardless of whether his theories were right or wrong, the practical teachings of the immigrant boy who grew up to be a great scientist seem to have saved thousands from pellagra suffering and death.

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#### MEDICINE

### Glands May Play Part In Cancer Among Women

**D**ISTURBANCE of certain glands, particularly the pituitary gland at the base of the brain, may play a part in the development of cancer of the child-bearing organs, Dr. J. Isfred Hofbauer of Cincinnati told members of the American Medical Association.

Cancer patients were improved by treatment which slowed the activity of their pituitary glands, before their cancers were treated locally, Dr. Hofbauer reported as evidence of the influence of the pituitary on this type of cancer.

This approach to the cancer problem is based on the theory that the pituitary

which stimulates normal growth also acts as a stimulant to the excessive growth of cells that eventually become cancer. According to the new view explained by Dr. Hofbauer, the prolific growth of cells before the birth of a child may be caused by a change in the balance of the glands of internal secretion. This overgrowth has been known to remain for months after the birth of a child and it may be that it persists after several experiences of childbirth. Experiments have shown that the same type of overgrowth of cells can be produced in guinea pigs and monkeys by giving them pituitary hormone.

Further indication that the glands may influence the development of cancer is seen in the fact that this type of cancer occurs so frequently toward the end of the childbearing period in women's lives when a change in the balance of the glands and the body functions takes place naturally.

Heretofore cancer of the childbearing organs has been attributed to injuries received during childbirth with resulting chronic infections. The army of cancer fighters is beginning to doubt whether this is an adequate explanation in all cases, Dr. Hofbauer said.

*Science News Letter, June 23, 1934*

#### ORNITHOLOGY

### Young Desert Hawks Secure in Natural Fort

See Front Cover

**D**DOUBLE defiance to a hard and hostile world is offered by the splendid pair of young desert hawks pictured on the cover of this issue of the SCIENCE NEWS LETTER. In addition to their own armament of beak and claw, formidable even in their immature state, these hawklets have around their nest in the top of a tree yucca a forbidding *cheval-de-frise* of down-pointing, spine-tipped tough leaves that defies any climbing enemy. Bristling birds in a bristling home, they are the very epitome of the rugged and truculent self-sufficiency that is the price of survival in the wilderness.

The picture, taken in the recently established Carlsbad Caverns National Park, constitutes striking evidence that there are worthwhile things to see under the vast open desert sky in this region, as well as in the caverns' tremendous depths. The birds of Zeus, no less than the bats of Dis, are worthy of our attention when we ride into the West in search of wonders.

*Science News Letter, June 23, 1934*