Pellagra vs. Indian Corn

(By Barton B. Smith, M. D., in the Charlotte Observer.)

There has been a great deal writing on the subject of pellagra and Indian corn in an uncertain and speculative manner, tending to fix the popular opinion, that diseased corn or its products as they are now used in America, are directly or indirectly responsible for the development and wide spread of pellagra in the South. After all that has been written along this line, there has not yet, to my mind, been introduced a clear and conclusive argument in this unjust indictment against one of the most economical, wholesome and healthful foods of creation. To discuss the subject intelligently with the public, it is first necessary to give a clear and concise history or treatise of pellagra from some admitted authorities. I therefore quote from the pen of William Allen Pussy, M. D., professor or dermatology in the University of Illinois; dermatologist to St. Luke's and Cook County Hospital Dermatological Association, written in 1807.

"Pellagra; Lombardian leprosy, Endemic erythema, Mal rosso.—

"Pellagra is an endemic tropical disease of toxic origin, occurring (chiefly or exclusively) in peasants who habitually eat diseased maize, and characterized by gastro-intestinal, cerebro-spinal, and cutaneous symptons.

"The disease comes on gradually, nearly always in the spring, with weakness, articular pains, giddiness, headache, and severe burning pain in the back, which radiates to the extremities, and are especially noticeable in the feet, and hands. With these there are symptons of gastro-intestinal catarrh, furred tongue, tense and painful epithelium, loose bowels, and sometimes jaundice. These manifestations of the disease may precede by weeks, the appearance of the eruptions.

"Eruptions—The skin symptons appear suddenly, often within 24 hours, as a diffused erthemat of either a dark red or bright shade of red. This may be simply a hyperaemia which disappears on pressure, or a livid congestion, with or without hemorrhage into the skin. Bullae occur in rare cases, and are followed by indolent erosions. The skin is swollen and burns and itches severly. After about two weeks the erthemia subsides and disquamation of the epidermis occurs, first in large flakes, afterwards in branny scales. Upon the disappearance of the active process the skin is left pigmented and somewhat thickened. Repeated attacks occur from year to year, and with the subsidence of each attack the pigmentation and the thickening are increased and this continues for several years. After four or five years the thickened skin begins to undergo atrophy and takes on the characteristics of the senile skin; keratose like senile kerotose form, and the skin becomes thin, loose, and dry, wrinkled and pigmented. As the disease continues from year to year the more and more extensive it becomes and the atrophic change may ultimately extend all over the body. At the same time, with these objective changes there may be some change of sensibility in the affected area.

"The distributions is one of the most characteristics features; the eruption is confined to the parts which are exposed to the sun, the back of the hands (the most characteristic locations), the forearms, face, neck and dosum of the feet. It appears first upon the back of the hands. Beginning in the spring, the disease lasts until July or August and then declines. It may entirely disappear in winter to reappear the following spring, usually with aggravated intensity. After two or three years all of the constitutional symptons become exaggerated. The tongue becomes red and dry, there is a burning sensation in the mouth, swallowing is painful, diarrhoea increases, and the patient emanciates rapidly. There are severe headaches and backaches, tenderness over the dorsal vertebrae, and insomnia. Paralysis of the third nerve is common, as are changes in the fundus oculi. The reflexes are at first increased and later diminished or disappear. In the late stages of the disease, all of the cerebro-spinal symptons are increased. During the course of the disease mental disturbances are common; melancholia, insanity, or imbecility. Occasionally epileptiform convlusions, paralysis of various muscles, and other manifestations or degeneragtive nervous processes. In mild cases the disease may last from ten to fifteen years. The average duraton is about five years.

"Etiology and Pathology:—the two essential factors in the production of the disease are the habitual use of diseased Indian corn and exposure to sunlight. The causative factors in the production of the disease are toxins which are developed (probably) by mold fungi in the decomposition of damp Indian corn. The condition is thus analogous to ergotism. The roll which sunlight plays in producing it is (probably) that of an exciting cause As the result of altered trophic conditions the skin is changed, but it requires the irritation of the rays of light to produce an actual pathological condition. The disease occurs endemically, and only among poverty-stricken peasants who in their labor in the fields are exposed to the sun and whose diet consists largely of polenta, a sort of porridge made of poor cornmeal.

"Lombroso has experimentally produced pellagrous symptons by the administration of these toxins. A pseudo-pallagra, as Roussel calls it, is seen in alcoholicism with peripheral neuritis and among the demented, in general paralytics in asylums. In the latter this is probably after a manifestation of Raynold's disease which is not uncommon in insane people.

"Pellagra occurs in children but most frequently between 30 and 50. It is almost confined to the lower class of peasants and is rarely seen in towns. Its geographical distribution is limited by the social and dietary factors which produce it. It was first observed in Spain in 1735. It occurs now in central and northern Italy especially, in neighborhoring parts of Roumania and Corfu, in Egypt and in India (Sandwichs), and perhaps, to a certain extent elsewhere. Northern Italy is its best known territory. It is unknown in America, although cases have been described by Sherwell in Italians in New York.

The foregoing is a comprehensive recital of a tratise by a renowned dermatalogist and in its essentials, has the concurrence of the American Dermatological Association and others of note.

We will wish to direct your attention to Lombardian leprosy (pellagra) as it existed in the Philippine islands and as we observed it during the Spanish-American war and in the years 1900 and 1901. While in charge of a hospital at Calambo, in the district of Laguna-de-Bay and in the southern part of Luzon, for the care of the sick and wounded natives, it was my privilege to study the conditions as they existed, and in a field where pellagra undoubtedly originates.

Among the native soldiers who had been poorly clothed and almost starved during their long struggle with Spain, and who had suffered all the hardships of war in the most favorable climate for the propagation of this disease, we found it existing to a great extent and learned some very interesting and important facts concerning it, which we could never have learned from any other source and we are offering the result and conclusions to the public for whatever good they may accomplish. Aside from the peculiar similarity to leprosy, or Alpine scurvy, the characteristic symptons of pellagra as given above existed. At first symptons are definite, general debility pain in the back, sleeplessness, digestive disturbances, and sometimes diarrhoea. Unlike the disease as it appears in countries where the seasons change; from winter to spring and summer, it is not periodic in its appearance, but when once it sets in, it spreads sometimes slowly, but surely, over the entire body and with dissication and exfoliation of the epidermis, which becomes very dry. There is a suppurative process underneath the crusts, which fissure and break, allowing the offensive discharge to flow over the surface and which stains or soils the garments, thus being easy means of communicating it to others. In some the surface becomes crusty, thickened and undergoes trophy, dry and wrinkled, with loss of sensibility. With the skin conditions there are digestive disorders, salivation, dyspepsia, and diarrhoea which may be hemmorrhagic. In the advanced stages there may be headache, backache, spasms, paralysis and imbasilism. Paralysis affects the legs first, and often the entire body, and sometimes results in sudden death.

Here we have reviewed pellagra in a country where every condition is favorable to the propagation of the disease and settle one fact, that is, that diseased Indian corn plays no part in the production of pellagra among the natives of the Philippine islands. Rice was and is their chief diet, while they had fruit, vegetables and meats only occasionally. The depravity, exposures to rain and sunlight, irregularity in feeding and improper masticating, stuffing at times when food was plentiful, together with the dirty and filthy habits, the living and sleeping in foul, dingy hovels, has proven to be sufficient to produce the disease in absence of the use of corn as food in any form or condition. The substance of all that has been written, so far a I have been able to collect after careful and persistent research among the most renowned dermatologists from the present as far back as the earliest history of the disease, characterizes it as a malady belonging almost entirely to that class, forced by poverty to life and habits that are conducive to disease, among whom most all the loathsome disease originates. Pellagra has never before been found to originate except among the poorest classes in countries where corn was known to be the chief food and known to be of an inferior grade, as are all other articles of food because they cost less. These facts have caused us to overlook all associated causes and we have been prone to accept the conclusions of others without giving the subject any considerable thought or investigation for ourselves. Since it is known that it thrices elsewhere, still among the same poverty-stricken classes, but where corn is not used scarcely at all, we are slow to hold on to the theory as it has been taught and so widely accepted, that it originates from diseased Indian corn exclusively. That diseased corn may be or is a factor in its production, along with many other conditions and causes is willingly accepted. Previous etiology brings Indian corn and maze into account, but not one has claimed to have established, as a definite fact, the absolute origin of the disease. It was claimed by Roussel that the disease originated only among poverty-stricken peasants, which was no doubt true, as it, in our opinion, requires the combined conditions of poverty to produce it. Habits and the conditions of the slovals, and the conditions of food, generally, and not a single food but a specific class of conditions of food, all taken together are required to produce pellagra. That it is not contagious or hereditary, if it be so admitted, is no proof that it originates from any single food product, and that it is spread by contact cannot be successfully contradicted.

There are some instances in the South where it would be hard to trace the disease to the use of corn, in those for instance who have not eaten any of the products in years, and such cases are on record, unless it was taken in foods adulterated with it, and in such cases it would be going a long way to find support for a superficial indictment against one of our most wholesome and healthful foods.

The same conditions that have produced pellagra in any other country will produce it in America and when those conditions grow to exist more universally in the South it may be expected that the disease will thrive, but at present the habits and conditions are not wholly suited to the propagation of pellagra to any great extent, if at all. As the South becomes more densely populated and the conditions required to produce it exist, there is no reason to hope that we will not witness its proportionate increase. The present perhaps has, in the South, some sections where life exists in all its poverty in a degraded conditions sufficient to produce pellagra, but it has found its way to our civilization by contact with it in countries where conditions have been suited for its existence for ages. In America, through the vast army in the Philippines, we have communed with it for the last ten years. For a long time during the Spanish-American war the American soldiers were quartered in homes and the hovels of all classes and conditions of the native, and their intercourse for all this time was more or less close or intimate. By the shifting of the army from year to year, some going, some returning to all parts of the continent, the seed have been scattered broadcast and are taking root where they find soil to suit. Pellagra will thrive best in the South and it will appear in the spring and tend to disappear in the fall and winter, but once well rooted it will appear each spring and will increase as long as conditions continue to grow more favorable to it. Pellagra is no less to be dreaded than is leprosy and its spread is as sure where conditions continue to favor it. It will originate only under certain conditions, which will be better known and regarded in future and by more careful study and observation by the medical profession. Though conceived and born in filth, it does not confine itself altogether to the boundary of its origin and it is no respecter of persons.

The pellagra bacillus has not been successfully identified or isolated. A complete circle of proof of the pathogenic character of the bacillus is lacking, but there is no doubt from the spread of the disease by contact, under favorable conditions, that a bacillus is the specfic organism of pellagra. There are unquestedly cases of its transmission from man to man, and its frequent occurrence in those who wash the clothing of those who are afflicted with the disease is evidence that it is transmitted by clothing which may be admitted as a common method of transmitting it. All of the methods of transmitting it and the spread of the disease, however, are not understood. The activity and the spread is not great, except when favored by conditions, and there are instances where families have lived for a long time in almost intimate relation with it, without being contaminated. The most important factor in infection with pellagra is a residence in a district where it abounds, and individual conditions and susceptibility are important factors. Pellagra may be contracted at any age, though it may be admitted that it cannot be transmitted by heredity. Personal odservations lead me to conclude that fish is one of the contributing causes for the disease in the Philippines.

Undner the caption—Ethiology and Pathology, by Dr. Pussey, your attention is directed to the following: "The causative factors in the production of the disease are toxins, which are developed probably by mold fungi in the decomposition of damp Indian corn," and again in the same connection he says, "The roll which sunlight plays in producing it is that an exciting cause and etc." The conclusions drawn by Dr. Pusey here are as clear and as conclusive as any that we have been able to find. All

(Continued on Page 11.)