The psychology of pellagra / by J.W. Babcock.

THE PSYCHOLOGY OF PELLAGRA

BY

J. W. BABCOCK

COLUMBIA, S. C.

Reprint from

THE JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

November 1910. Pages 563-574

Presses of

Walker, Evans & Cogswell Company

Charleston, S. C.

1910

Reprint from THE JOURNAL OF THE SOUTH CAROLINA MEDICAL ASSOCIATION

November, 1910. Pages 563-574

THE PSYCHOLOGY OF PELLAGRA*

By J. W. Babcock.

Physician and Superintendent, State Hospital for the Insane, Columbia, S. C.

Recognizing our inexperience in dealing with many phases of the pellagra problem, we must admit for some time to come our dependence upon European writers for authoritative descriptions of the mysterious malady. Hence I shall, for the second section of this paper, confine myself almost entirely, to reviewing and quoting from articles and monographs upon the mental symptoms of the disease that have been written by Italian, German, French, and English observers

In the admirable description of pellagra given by Copland (9), it is stated that: "The nervous system presents remarkable disturbance, and the manifestations of the mind are more or less disordered. The pellagrosi complain of a sense of heat in the head and spinal cord; of tingling and darting pains in the course of the nervous system, of heat in the limbs, palms of the hands and particularly in the soles of the feet; of great weakness of the limbs, with trembling when attempting to stand and sometimes of contractions of the lower limbs. Their looks become sombre and melancholy. Ennui, depression of spirits, and mental imbecility increase with the progress of the malady. Dr. Holland states that the pellagrosi afford a melancholy spectacle of physical and moral suffering at this period. They seem under the influence of an invincible despondency, they seek to be alone, scarcely answering questions put to them; and often shed tears without obvious cause . Their faculties and senses are impaired and the disease when it does not carry them off from exhaustion of the vital powers, generally leaves them insensible idiots, or produces attacks of mania, soon passing into utter imbecility or idiocy."

Hack Tuke studied pellagra in Italian asylums in 1865. He says (10): "The patients were in an advanced stage of the disease, and were all more or less emaciated, sallow, anemic, and presenting a miserable dry wrinkled skin. They were obtuse and inert, their mental state being that of dementia, quiet, chronic mania; or, in some instances, chronic melancholia. None of them were in an acute maniacal condition."

The views of Salerio (11), director of the asylum of San Servolo, Venice, upon the mental condition of his patients, may thus be summarized: They are generally frightened; think they are persecuted, or possessed with the devil, suspicious, refuse food and medicine, and have exalted religious notions. Suicidal tendencies may be present. Homesickness is common and severe. Finally, they are liable to lapse into dementia, paralysis, or tubercular diseases.

Bucknill and Tuke (12) quote also from an early work of Lombroso, who thought that the one characteristic of pellagrins, sane or insane, was a greater moral impressionability. A slight insult, the threatening of some trival danger completely carries them away. If pellagrous insanity

*The second part of a paper entitled "The Prevalence and Psychology of Pellagra" and read before the Am. Med. Psycholog. Assoc. at Washington, D. C., May 5, 1910. The first part appeared in this Journal Sept. 1910.

assumes a type, it approaches rather that of chronic mania and dementia than that of monomania. A real or apparent stupidity, an obstinate mutism, is tolerably common, which Lombroso, ingeniously terms "psychical catalepsy." But, as a rule, their insanity is of a misty, ill defined, contradictory character, like that produced by old age, or by anemia, and differing in this point from general paralysis.

Morselli (13) gives four forms of pellagrous insanity, viz., supra-acute pellagra (typhoid pellagra), pellagrous melancholia, pellagrous dementia, and pellagrous pseudo-general paralysis.

Babes & Sion (14) say in part:

"Usually after several years of somatic pellagra, psychical symptoms come into prominence. At first the patients experience mental weakness. The peculiar pellagrous lunacy is preceded by spasmodic, then tonic, cramps and generally bodily weakness, and advances to a true pellagrous paralysis. The cramps of feet, hands and calf muscles are sometimes so violent that they may result in epilepsy, contractions and swooning. So-called pellagrous epilepsy occurs as the result of spinal pain, the patient being drawn backwards. An important condition called pellagrous tetanus has been described by Strambio, opisthotonos, being a common characteristic symptom. Sometimes the patients are drawn forward and fall to the ground. Choreiform movements especially in the head, are observed. Generally from the incipiency of the disease, depression and weakness of the memory are noted. Rousel asserts that in this stage deliria do not appear, but that they come on in the spring of the second or third year. The sadness may advance to mutism and refusal of food, these conditions being often interrupted by lachrymose or maniacal or suicidal episodes. An acute attack leaves the patient exhausted, depressed and hypochrondriacal. Such attacks recur annualy at about the same time, the intellect weakens, and gradually dementia develops.

"Pellagrous melancholia shows various stages: at first, there are psychic impediments followed by apathy or stupor. Delusions of sin, of persecution, etc., appear. Mania is rare, but catalepsy sometimes occurs.

"When paralysis supervenes, euphoria appears, presenting a disease-complex like general paralysis, but even in advanced stages of the disease remissions may occur."

G. Antonini (15) writes:

"Already in the first stages of pellagra there appears a decided modification in the mental faculties; there is a great impressionability, a greater psychical excitability, a slight disappointment depresses greatly the tone of feelings, or produces excessive reactions (from want of initial inhibitory powers). In the progress of the disease, we can have true amentia,* states of mental confusion common to all psychoses arising from exhaustion. This state can show suddenly an aggravation of symptoms and lead to death with a syndrome of acute delirium (typhoid pellagra) and yet it can also present in certain cases a true progressive paralysis of pellagra.

"But a frequent symptom is the obstinate refusal to take food, such as aggravates painfully the already sad picture of the pellagrin."

Griesinger notes (16) that pellagrous insanity, according to Clerici (1855) consists chiefly in a vague, incoherent delirium, accompanied by stupor, loss of memory, and by loquacity without special disorder of intelligence, or violent excitement; the melancholic state, which predominates for a long time, always passes gradually into a state of torpor of all the mental powers, with muscular weakness which greatly resembles general paralysis.

Mongeri (17) concluded that the pel-

*The Continental writers use "amentia" in the sense of an acute confusional insanity.

lagrous psychoses begin, ordinarily, with a period of mental depression accompanied by hypochondriac ideas. Following great mental prostration, the ideas become confused. Later melancholia appears acompanied by hallucinations of hearing, with illusions of general sensibility. Following this condition are delusions of persecution with a tendency to drowning (the hydromania of Strambic.) Again developing persecutory paranoia, pellagrins commit crimes of every sort, (homicides, infanticide, incendiarism, etc.) Dementia is the common termination.

We will next quote from Bianchi, (18) one of the leading modern Italian writers on mental diseases.

"The nervous phenomena dominate the scene in pellagra. We may classify the different varieties in two groups: The chronic and the acute. The first is characterized by general depression, melancholia, confusion, slow dementia, paresthesias and ataxic gait. Contractures and subsulti are absent, although in most instances, the reflexes are exaggerated. In the acute form, we have elevation of temperature 39 degrees to 41 degrees C.; intense neuromuscular excitement, subsulti, contractures, muscular rigidity exaggerated reflexes and confusion with phases of exaltation. There are numerous intermediate forms in which we observe a great variety of psychical phenomena, and also alternations of excitement and depression. Phases of remission and of apparent recovery are observed, especially at certain seasons."

Regis (19) announces, that, "It is recognized that the most common form of psychosis in pellagra is mental confusion with melancholy, or dreamy delirium. This occurs more or less marked in most cases. It is manifested by an inertia, a passivity, an indifference, a considerable torpor; by insomnia, hallucinations often terrifying, both of sight and hearing; by delirious conceptions, with fixed ideas of hopelessness, of damnation, of fear, anxiety, persecution, poisoning, of possession of devils and witches, of refusal of food, and so marked a tendency to suicide, and to suicide by drowning that Strombio gave it the name of hydromania. This melancholy depression, which can reach, in certain cases, even to stupor, is always based upon a foundation of obtusion, of intellectual hebetude, and of considerable general debility, which becomes permanent and terminates by degrees in dementia, in proportion as the pellagrous cachexia makes new progress. It is accompanied sometimes by a polyneuritis. The mental confusion of pellagrins can, in place of changing directly into dementia, turn to a chronic mental confusion.

"One may also observe in pellagra, as in every chronic grave intoxication, a morbid state resembling general paralysis, (pellagrous pseudo-general paralysis). This occurs especially in the cases where, instead of habitual melancholy ideas, the patients present ideas of satisfaction and of wealth."

Procopiu (20) discusses the subject at length, saying in part: "We have seen that the character and intelligence of pellagrins change. They become sad, apathetic, silent: in the more advanced stage they are melancholy, and fall sometimes into absolute mutism, or respond with difficulty, and have the air of not understanding what is said to them.

"Sometimes this melancholy is accompanied with stupor, and leads the poor pellagrins into dementia.

"It is not rare in this condition, that an attack of acute mania breaks out. At another time, the attack of mania breaks forth suddenly without apparent cause, or under the influence of a sunstroke, a quarrel, a disappointment, etc.

"Sometimes it is in the Spring that the excitement, as the other symptoms

of pellagra, makes its appearance, but generally it is later than the others, and bursts forth at the end of the season, or even during the summer.

"Pellagrous insanity has been divided into acute and chronic forms.

"The acute form is more frequent when the pellagra is associated with alcoholism, then this form presents the characters of delirium tremens. The acute form often manifests itself in the course of the chronic form, but it can also begin in the state of apparent health.

"The acute insanity in particular which bursts out suddenly while the patient is in a state of mental health, is easy enough to cure. But when the disease is advanced, and the lesions of the nerve centers are profound, cure is difficult, sometimes impossible, especially in the case of dementia. When even a sensible amelioration is obtained, the intellectual condition of the patient remains always in a marked degree of inferiority."

From the more recent treatise of Tanzi (21) we learn that "Pellagra is almost always accompanied by psychical disturbances, which often have the character of true mental diseases.

"A pellagrous melancholia and a pellagrous mania have been described. The characteristic psychosis of pellagra is, however, amentia, which manifests itself acutely in loss of sense of place, loss of memory, confusion, hallucinations, and paresthesias, from which there arise morbid impulses and delusions. Pellagrous amentia often assumes a depressive form, which simulates melancholia; and in some cases, either from time to time, or throughout the whole course of the psychosis, it is accompanied by exaltation, which gives it some resemblance to mania.

"The first attack of amentia occurs after pellagra has existed for some years, and has already given rise to erythema, and diarrhea, and has remitted from time to time. In other words, the pellagrous lunatic is, as a rule, a chronic sufferer from pellagra. But whilst the pellagra, although chronic, continues to run an intermittent course, the mental disturbances associated with it have the characteristics of an acute insanity, which corresponds exactly to amentia—i. e., to the most typical of the acute insanities, both as regards the symptoms and course.

"The insanity of pellagra is thus something different from common melancholia, or from ordinary mania. It is also something more than simple amentia. We may regard it as the combination of two distinct clinical pictures, namely, that of amentia in the first attacks, and that of dementia in the later and progressive phase marked by chronic and incurable cachexia. It is an intermittent and progressive amentia, which, if not cured or if not early fatal, terminates in dementia."

What is the relationship of pellagra to progressive paralysis? Baillarger asserts that pellagra may be followed not only by mania and melancholia, but also by progressive paralysis. Verga opposes the last opinion, while Regis and Pianetta affirm it. (Gregor)

Gregor (22) in 1907, recognizing that exhaustive clinical observations on the so-called mental disturbances of pellagra were wanting, made careful analyses of the psychic condition observed in 72 cases, who had been admitted to the Bukowina State Asylum from March, 1904, to September 1905. In 1902, he says Finzi published his "Psicosi Pellagrose," coming to the conclusion that this mental disturbance is essentially an insanity and that the psychosis of pellagra is amentia. This view, which agrees with that of Tanzi was combatted by Vedrani, who maintains that the psychosis of pellagra takes usually its course without serious disturbances of

orientation and reason. On the other hand, Warnock (23) claims that symptoms of melancholia are the usual accompaniments of the mental disturbances in pellagra, and thus approaches the views of the older writers, who assume especially close relations between pellagra and melancholia. Thus Aubert tried to prove in 1858 that an attack of pellagra might convert an heterogenous disease into melancholia. This view was vigorously maintained by Aubert against Baillarger and others, who held that the psychoses of pellagra are polymorphic, including meningitis, mania, melancholia, etc. and even general paralysis. This view is still maintained notably by Zletarovic, who has observed the development on the basis of nutritive disturbances caused by pellagra of melancholia and mental weakness to complete stupor and dementia, but he never observed mania. Even Lombroso and Tuczek, says Gregor, give only pictures of psychical conditions. Gregor also considers the studies of pellagrous insanity by Finzi and Vedrani as inadequate. But granting the absence of a characteristic symptom-complex, he says that we must still search for characteristic peculiarities, since psychoses, which are in themselves not specific, may assume certain symptoms, which are to be considered with regard to their etiology.

Gregor also includes in his study whether the relationship between pellagra and the psychoses was accidental or causal. It will thus appear that he attempts to reach a much broader and deeper conception of the neuroses and psychoses of pellagra. He divided his 72 cases into seven groups: (1) Neurasthenia, (2) Acute Stuporous Dementia, (3) Amentia (Acute Confusional Insanity) (4), Delirium Acutum, (5) Katatonia, (6) Anxiety Psychosis, and (7) Manic-Depressive Insanity.*

Gregor analyses most of his cases at length, finally summarizing the symptoms he had observed.

I. NEURASTHENIA. (SEVEN CASES).

The symptoms of Gregor's first group in their details are not specific of pellagra, but offer in their totality a characteristic disease picture.

The symptoms are subjective and include headache, pain in the gastric region, vertigo, paresthesias, lassitude, depression, a sense of unrest and anxiety, which may be raised to a phobia, as well as ill-defined apprehensions. There is also a sense of bodily and mental incapacity, and of illness. Their conduct is normal, and the intellect may be unimpaired, but they are incapable of mental and physical exertion. The process of association is distinctly disturbed, the simplest question often being answered only after prolonged hesitation. With depression of spirits, hypochondriac notions may develop from a consciousness of being pellagrous, or from experience in former illnesses. In some cases there is a slight motor unrest, and a desire to move about, but as a rule patients of this group labor under motor impediment, and sink finally into a condition of apathy and resigned inactivity. Gregor admits that these symptoms are not specific of pellagra. But he suggests that, if these symptoms have lasted for several years, the suspicion of pellagra as a causative factor, should be aroused

*In Stoddart's recent work, (24) these varieties of exhaustion psychoses are recognized:

1. The depressive form (associated with motor restlessness).
2. The excited form (Exaltation always with motor excitement).
3. The Stuporose from. (The patients are quiet and rigid, the rigidity affecting the trunk and limbs, and they have terrifying hallucinations, and consequently are in a state of extreme depression).
4. A form of "collapse delirium" as recognized by Kraepelin.
5. The katatonic form of dementia precox.
6. There is also an intermittent form of psychosis tending to dementia.

in the physician's mind, even without the presence of the somatic stigmata of the disease. He also observes that the first attack of pellagra is more likely to be accompanied by neurasthenia and that this condition commonly preceded the development of the other pellagrous psychoses.

II. ACUTE STUPOROUS DEMENTIA. (TEN CASES).

The milder cases of this group differ from the preceding group only in degree. The symptoms merely suggested in the former group exist here in full force. The cases of this group are characterized by a distinctly marked stupor, tending to remissions, by deep mental depression, a vivid sense of insufficiency and peculiar subjective troubles. The dependence upon pellagra intoxication can be established by the close connection of the psychic disease-picture with the somatic symptoms of pellagra. The mental symptoms improve with the bodily. The external appearances, the depressed mental condition, the tendency to suicide, etc., explain the fact that such cases are frequently considered melancholia. Finzi contradicts this view, and places these cases under amentia. Some of Tanzi's and Vedrani's cases also come under this group.

The patients give the impression of being ill, as they lie still and apathetic in bed for weeks, and answer repeated questions only after a painful effort, or not at all. Requests of the simplest nature are carried out only with hesitation and effort, and often the action once begun is interrupted in its first phase, or the request is forgotten. Mostly we are assured that the patients are well oriented, and often we see after the hesitation ceases, that the psychic activity is revived for a short time, but sometimes in the height of the disease orientation may also be disturbed. Illusions appear, the patients show a sense of insufficiency, and sometimes also a hypochondriacal sense of sickness, and a consciousness of their psychic impediments.

In many cases in which the stupor developed gradually, a disturbance of psycho-motor activity was observed without vivid mental disturbances. On the other hand, some cases, recognizing their incapacity for practical life, voluntarily commited themselves to the asylum. Most cases showed a gradual development of an affectless stupor, with a final return to their former mental condition. Rarely psychic impediments develop in a relatively short time. The sense of insufficiency may assume a distinctly melancholic coloring, with suicidal tendencies. Again severe cases may assume temporarily katatonic symptoms of posture and motion stereotypies.

With this group, memory disturbances were especially well marked, as Tanzi has emphasized, but weakness of memory is not a characteristic of acute pellagrous dementia. Upon convalescence memory returns easily, so that the apparent memory disturbance is due rather to the general difficulty of performing psychical processes than to weakness.

With the relief of the somatic symptoms of acute pellagra, the mental symptoms also improve. Besides, the connection between pellagra and nervous disturbances is evident, and different mental symptoms may complicate the picture. It would appear that melancholia is the typical mental disturbance of pellagra. Tanzi believes that we should call such cases amentia. and consider them slight forms of this psychosis. It is in this group that Tanzi would place the typical cases of pellagrous insanity. Stupor seems to promise a long duration, and an unfavorable prognosis. Favorable cases lasted from one to six months.

III. AMENTIA (ACUTE CONFUSIONAL INSANITY). (THIRTY-TWO CASES).

These cases were long continued

with a tendency to remissions and intermissions. After a prolonged period, which shows essentially the symptoms of the first group, appear usually terrifying hallucinations, accompanied by violent motor excitement. The delirium was frequently followed by stupor, or existing stupor was interrupted by delirium. The patients see the house or village burning, enemies coming, wild animals attacking them, the devil appears, or machines cut off their heads. More rarely, they have quiet dreamy states, the heavens open and the Lord appears, bishops, priests, figures, etc. pass by. In imagination they return to the scenes of their daily life. Again, they run away to escape the flames, or to defend themselves against persecution Here we have phenomena of motion in connection with hallucinations. If secluded, they move about, are noisy and knock upon the door. The duration of this excitement varies from a few hours to several days. These episodes are followed more or less by long intervals in which the patients are quiet in mind and body. They may be stuporous, but usually show only slight disturbance of orientation. Later they pass into a delirium like that of meningitis or typhoid. If diarrhea be present, the complex of typhoid pellagra is recognized. This may develop in a chronic case, or be an acute process. While in rare cases the bodily and mental symptoms may improve, death usually follows this typhoid condition. Hallucinosis seems to offer for the first attack a decidedly favorable prognosis.

Dementia does not always ensue upon a severe initial attack, but develops in chronic cases of either bodily or psychic pellagra. The development of katatonic symptoms, which may appear, especially in youthful cases, renders the diagnosis difficult.

IV. ACUTE DELIRIUM. (TWO CASES).

The cases of this group are distinguished from those of the third group by the intensity of the disease symptoms, hallucinations, motor excitation, and shorter course ending in death. For this reason, the conception as acute delirium seems justified.

The symptoms of this condition may occur without the bodily signs of pellagra. But they usually occur synchronously. Absence of a rise of temperature has been noted by both Italian and German observers.

Groups II., III., and IV. show a great similarity with the mental symptoms of acute infectious diseases. They might, therefore, be classified under the infective-exhaustive psychoses.

V. KATATONIA. (TEN CASES).

The katatonic condition occurs with acute somatic pellagra. Here, considering the concurrence of acute somatic and psychic pellagra, we must assume a pellagrous intoxication as the causative factor, as in pellagrous neurasthenia. Many patients show consciousness of their disease. Hallucinations may precede this condition. Excitment, stereotypy, wild jactitation and verbigeration are common. The katatonic cases pass rapidly into dementia.

Of the cases of the fifth group, the majority belong to the katatonia subdivision from the symptoms, course and termination. In three cases, (females) excitation occurred, ending with stereotypy, jactitation and verbigeration. The patients did not show marked affects. In one case, hallucinations preceded the condition. In all three cases, the transition into dementia was rapid, in which posture and motion stereotypies, impulsive actions and talkativeness were observed. In one case, these symptoms were followed by a permanent negative phase. In another case, besides many postures and motion stereotypies, an interchange of negativism and *flexibilitas cerea* was

observed. In one case, the katatonic symptoms were marked from the beginning. A male case showed, on admission to the hospital, katatonic excitation, and after a few days a remission followed by another katatonic phase.

Six of these cases ended in dementia more or less rapidly, although remissions may occur.

VI. ANXIETY PSYCHOSIS. (THREE CASES).

The violent, fluctuating anxiety affect, the motor unrest, the anxiety ideas, and the "phonemes" completing them, determined from the first the diagnosis of an anxiety psychosis. It is true, this disease picture is complicated by extraneous features. The patients show a marked sense of insufficiency, appear slightly stuporous in the intervals between attacks and resemble cases of groups II and III. Later after the anxiety attacks have disappeared, the mental weakness increases, the second phase gradually lessens as it does in patients of the groups mentioned. In the second case, the psycho-motor weakness changed by turns with violent anxiety affects and vivid motor unrest. Temporary ideas of persecution, and of sin, and later of stupor were also observed. The third case was typical depressive melancholia.

VII. MANIC-DEPRESSIVE INSANITY. (TWO CASES).

Of the two cases, one showed the condition of mania arising from subjective pellagra troubles. In the other, mania was followed by a distinct stupor.

SPINAL DISTURBANCES.

Gregor verifies Tonnini's observations upon the spinal symptoms of pellagrins. These are: Increase of the tendon reflexes, increase of mechanical muscular excitement, tremor of the fingers, rigidities and spasms of the leg muscles, spastic gait, diminution of the tactile, thermal, faradocutaneous sensibility; paresthesias, ataxia of lower limbs and in rare cases, of the upper extremities; and Romberg's symptom. Also, muscular spasms; tonic spasms being present in patients in the terminal stage of pellagra, but clonic spasms are also observed, and these without the symptoms of typhoid pellagra. Paresis of the lower facial nerve was also noted.

DEMENTIA.

The dementia following pellagra shows different forms. One form develops an almost complete disappearance of mental activity, which justifies the name "paralytic." But a milder degree of dementia characterizes the larger number of cases. They are oriented, usually well-behaved, but dull and show a lack of self-restraint, with a tendency to break out into violent passion and impulsive actions.

A simultaneously existing alcoholism has a modifying influence upon the disease picture. Furthermore, in many individuals, the pellagrous mental disturbance does not appear until old age, and brings about a precocious senile dementia.

There is a distinct pellagrous dementia, like paresis, marked with somatic changes. An affirmative answer is given to the question: Are there disease-pictures of dementia, whose anatomical basis is an injury to the brain by the toxines of pellagra?

TERMINATION.

Of 42 non-fatal cases, 21 were first attacks. Of these 17 recovered and four became demented. The others (21) had already passed through former psychoses. Of these 7 were cured and 14 became demented. These figures prove how unfavorable for complete cure the pellagrous psychoses are.

Of the 72 cases, Gregor classified under amentia group 32, the dementia and katatonia 10 each; neurasthenic 7, anxiety psychosis 3, manic-depressive and acute delirium 2 each. The other cases making up the total were excluded

for alcoholism, etc. These figures show that not a sufficient number has been studied for final conclusions. The further studies and reports promised by Gregor will be awaited with interest.

GREGOR'S GENERAL SUMMARY.

In pellagra there occur mental disturbances, which belong to different forms of psychoses. The first three groups must be considered as pellagrous from their development, symptomatology and course, being caused by the pellagrous intoxication of the central nervous system. The assumption of a pellagrous dementia is justified; it can be delimited in the terminal stage from dementia paralytica, which is alone to be considered differentially. Weakness of memory is not a characteristic sign of pellagra, its apparent presence being really a sign of psychic impediments. The many-sidedness of the condition picture explains the view that all forms of mental disturbances may occur in pellagra. Pellagra does not cause true melancholia, and depression in pellagra is not dependent upon exhaustion, since it occurs also in well-nourished cases, and in favorable conditions of life. The contradiction between the views of Finzi and Vedrani is explained by the fact that both had not the same pictures before them. Furthermore, hallucinations and disturbances of orientation occur episodically in pellagrous psychoses. Among the spinal symptoms, the marked diminution of farado-cutaneous sensibility and the occurrence of clonic muscular spasms in the so-called second stage deserve special mention.

As will be seen, Gregor's classification also is not above criticism; katatonic conditions are observed in his dementia and amentia groups, and his acute delirium differs only in degree from some of the same cases. Paranoic symptoms appear in the patients of several groups, and stupor with his anxiety cases. A neurasthenic condition preceded all of the psychoses, but his paralytic cases equally deserve separate grouping. He admits typhoid pellagra without temperature, and pellagrous neurasthenia without somatic stigmata, while renouncing *pellagra sine pellagra*.

The only careful consideration of this broad subject that has come to my knowledge by an American physician, is that by J. W. Mobley (25) of the Georgia State Sanitarium. He says his cases fall principally under the intoxication, or infective-exhaustive group, and he has subdivided them under four headings:

1. Acute Intoxication Psychosis, with psycho-motor suspension.
2. Infective-Exhaustive Psychosis, with psycho-motor retardation or excitation.
3. Symptomatic Melancholia, with psycho-motor retardation.
4. Manic-Depressive, with psycho-motor retardation or excitation.

The question now arises: Under what group shall pellagrous insanity be classified?

Bucknill and Tuke (26) classify pellagrous insanity with alcohol under toxic insanity. Regis (27) classifies the pellagra psychosis with the psychopapathies of exo-intoxications; Mongeri, (28) under the infective psychoses, between post-influenzal and Korsakoff's disease.

Bianchi (29) classifies pellagrous insanity under the toxic psychoses, with alcoholic, morphine and cocaine conditions, and separate from the infective group. Tanzi (30) considers it a toxic insanity.

CONCLUSIONS.

The association of pellagra with nervous and mental symptoms is common. This relationship is that of direct cause and effect, and is not an accident or coincidence.

Cases of pellagrous insanity have usually suffered from pellagra with neurasthenic symptoms for sometime

before the development of mental symptoms. The psychoses are therefore, as a rule, the result of a chronic intoxication.

Some cases of pellagrous insanity appear to belong to the infective-exhaustive type of mental diseases, and others rather to the toxic group. In view of the fact that these two groups have been embraced under the comprehensive term of confusional insanity, many cases of the pellagrous psychoses may better be included under the general heading of confusional insanity.*

It seems to be admitted that the mental condition of pellagrins undergoes an early modifidation. This early mental state may be ill-defined or show itself by a greater moral impressionability, or greater psychical excitability, or it may be described under the general term of neurasthenia. Later inertia appears, the patients are apathetic and show psychomotor impediments. There is said to be intellectual hebetude, stupor or even mutism. Thus Lombroso's "psychical catalepsy" may appear. If they are not silent, pellagrins respond with difficulty, or have the air of not understanding what is said to them. Insomnia is almost universal, and depression, (psychic pain) is characteristic. Stupor often ensues, and confusion, the type of exhaustion and intoxication psychoses, dominates the scene. The patients appear frightened, become suspicious, have ideas of demoniacal possession, refuse food and medicine, are subject to hallucinations, illusions, delusions, are suicidal (hydromania) and have other criminal tendencies. Episodic disorders of memory and orientation are observed.

The effort is sometimes made to classify the mental condition of pellagrins as acute and chronic. *The acute*, commoner symptoms are: Temp. 39 degrees to 41 degrees C.; Neuromuscular excitement, subsulti, contractions, muscular rigidity, exaggeraated reflexes, confusion with phases of exaltation, and marked insomnia.

This condition is more common with alcoholism but may be engrafted upon the so-called chronic form. It is often manifested as an acute collapse delirium, and is probably the typhoid pellagra (pellagra typhosus) of some writers.

In chronic cases: Depression, confusion, paresthesias, hallucinations, and illusions, memory disturbances, insomnia, exaggerated reflexes, ataxia, and terminal dementia.

Intermediate forms occur, being marked by alternations of depression and exaltation with remissions and apparent recovery. Excitement may break forth without cause, especially in the Spring and Summer.

Polyneuritis is sometimes observed.

For the chronic form, dementia is the common termination, but it may be complicated by paralysis or tuberculosis.

In the first attack the pellagra psychosis is an amentia, (confusional insanity). In the latter and progressive phase, marked by chronic and incurable cachexia, it is a dementia. It is an intermittent and progressive amentia, which if not cured, or if not early fatal, terminates in dementia. (Tanzi) Or it may end in chronic mental confusion or in pellagrous pseudo-general paralysis. (Regis.)

Depression and confusion are the more common mental symptoms associated with pellagra, but periods of exaltation (excitement) occur episodically.

Strictly there is no mental symptom-

*It may be well to place here a summary of Kirby's views of the symptoms of confusional insanity: (31) A relatively short course, some delirium or very marked confusion, hallucinations, unsystemized delusions and later stupor and mental enfeeblement. Delirium varies according to the character of the individual and therefore may be absent or very severe and fatal. Hallucinations, delusions and disorders of memory and orientation vary in individuals and groups.

complex characteristic of pellagra, but pellegra may act as the exciting cause of several forms of nervous and mental states, varying from neurasthenia to polyneuritis and meningitis, and from simple depression to paretic conditions and dementia.

Under the influence of the pellagrous intoxication patients commit crimes—suicide (hydromania),homicide, infanticide, incendiarism, etc.

According to the degree or duration of the pellagrous intoxication or possibly from idiosyncrasy, the patient is liable to develop the symptoms of acute collapse delirium at any time, and die in the attack.

It is not unlikely that the mental symptoms of pellagra may differ by seasons or in different countries and in different parts of the same country, just as broadly speaking, do the physical signs and symptoms of the disease.

After all may not Baillarger be right in questioning whether the pellagrous poisoning does not, like alcohol, produce these various neuroses and psychoses according to the reaction of different individuals?

Finally, in the language of Dr. Zeller, when we understand what pellagra is—"root and all, and all in all"—shall we not better understand what insanity is?

REFERENCES.

9. Copland, J., Dict. of Pract. Med., N. Y., 1859.

10. Bucknill and Tuke, Psycholog. Med., 9th Edn., 395.

11. Idem, 396.

12. Idem, 397.

13. Morselli, "Mallattie Mentali," I., 437.

14. Babes and Sion., "Pellagra," 1907.

15. Antonini, G., "Pellagra.," 59.

16. Griesinger, W., "On Mental Diseases," 194.

17. Mongeri, L., "Mallatie Mentali," 228.

18. Bianchi, L., "Text-Book of Psychiatry." 751.

19. Regis, E., "Precis de Psychiatrie." 1909.

20. Procopiu, "Pellagre," Paris, 1903, 100.

21. Tanzi, E., "Text-Book of Mental Diseases." 286.

22. Gregor, A. Yahrb. f. Psychiat. 1907, 28, 215.

23. Warnock, J., Jour. Ment. Sci., Jan., 1902.

24. Stoddart, W. H. B., "Mind and its Disorders," 225.

25. Mobley, J. W., Conf. on Pellagra, 1909, 146.

26. Bucknill and Tuke, Op. Cit.

27. Regis, Op. Cit.

28. Mongeri, Op. Cit.

29. Bianchi, Op. Cit.

30. Tanzi, Op. Cit.

31. Kirby, G. H., Dana's "Text-Book of Nervous and Mental Dis." 1908.