ways low. The percentage of hemoglobin is low in proportion to a number of red blood cells, and even Banti himself states—and I am in full accord with him—that leucocytosis never occurs in splenic anemia. In fact, there is almost always leucopenia, a fact which has been called attention to by Senator, but we do not believe this is entirely correct, because some cases may be associated with a normal number of leucocytes.

With respect to the case of Dr. Bassett, I think undoubtedly that very often in the course of leukemia, by virtue of an intercurrent infection, the absolute number of leucocytes is markedly diminished, sometimes possibly as a result of X-ray treatment, but almost always the diagnosis can be arrived at in these cases by a differential leucocyte count, and so far as my experience goes, except in one case which has been recently treated by Benzol, you can almost always make the diagnosis of leukemia from the differential leucocyte count. A high percentage of myelocytes and mast cells is characteristic of mild leukemia. I do not think eosinophilic myelocytes are necessary.

This case which I reported had all the macroscopic evidences of cirrhosis of the liver and histologically and clinically the symptoms of a true Banti's disease and gave all the reaction for melanin. The pigment was non-iron containing. I want to emphasize the fact that these Banti cases are associated with a definite clinical syndrome, with a definite pathologic picture, and without demonstrable cause, and that this triad is necessary to make our cases conform to true Banti, and when we can demonstrate the real cause we must separate the cases from the general group of true Banti.

TREATING THE GASTRO-INTESTINAL TRACT IN PELLAGRA.

By CLARENCE C. ELEBASH, M.D.,
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With the etiology and consequently the treatment of pellagra still unsettled, various and sundry theories are being put forward as to the cause and consequently as many treatments. Any cures, or apparent cures, however, cannot fail to be interesting. About two and a half years ago I saw an article in which the writer, as I remember, suggested that the question of an unbalanced ration—probably excess of carbohydrate—was an all-important one in pellagra. In his treatment the main issue was an abundance of fruits and green vegetables. That thought carried forward has been the real stimulus for these few

remarks. No attempt will be made to review all the voluminous literature.

Pellagra is not as plentiful in this section of the country in the last two or three years. A great many of the cases that we see in this community do not live here, but come into town to see a doctor and get a prescription, and consequently are hard to keep up with. No treatment can be given a real fair trial in such cases. The cases upon which I base these few remarks are ones that I know have faithfully obeyed instructions. Not every one has been unquestionable pellagra; several have been border line cases, upon which I shall speak later. The condition in all, however, that gave the most trouble was gastro-intestinal, and in the intestinal tract will be found, I believe, the real cause of pellagra, absorption of some poison from this tract. What that poison is, of course, remains to be seen.

Inefficiency in intestinal digestion, whether by reason of biliary or pancreatic deficiency, will eventually make for *protein* toxin absorption. "When proteins are taken into the alimentary canal and are acted upon by digestive juices, the product becomes poisonous at about the peptone stage, and if the peptone formed in alimentary digestion should be absorbed in the circulation it would be highly injurious; but the digestive process proceeds and the peptone is broken up into harmless amino-acids which are absorbed and synthesized into the protein of our bodies. When proteins find their way into the blood without being brought under the action of the digestive juices of the alimentary canal, they must be digested in the blood and tissues, and in this process the protein poison is set free; and since general distribution cannot be hindered it exercises its deleterious effects on the body. We now know that the symptoms of many diseases are due to the parenteral digestion of the proteins." (Vaughan, *American Medical Journal*, November 15, 1913). It is obvious, then, that cholecystitis or chronic pancreatitis would bring about one form of intestinal toxemia and might very well, in my opinion, give

the symptoms of pellagra. Jelks, of Memphis, writing in the *SOUTHERN MEDICAL JOURNAL* for March, 1912, believes that pellagra describes a series of symptoms dependent on intestinal parasitism. He has noticed that the relief of skin lesions follows treatment and relief of the intestinal condition. Law, of Montgomery, has recently reported five cases of pellagra treated with lactic acid bacillus with good results; his idea evidently being to check intestinal putrefaction and consequent toxemia. Writers, I believe, have stated that pellagra is closely akin to scurvy. Results obtained with the treatment of which I speak would accord with such a view, possibly a "result of poison by ptomaines, possibly specific poison. All the theories, however, acknowledge that deficiency of green vegetables is one of the predisposing causes which lead to scurvy." (Tyson-Fussell, page 660).

I know that I do see cases that differ from true pellagra only in degree. Take this as a sample history: The patient complains of tiring more quickly on exertion, not able to do heavy work he was formerly used to without feeling extremely tired, no chills, very slight fever, no particular pain; the type of case that is so frequently spoken of as "full of malaria." The patient gives a history of "fullness and gas on the stomach," especially after eating. The stools indicate a poor digestion of fats and muscle fibre. Such a condition has been going on for several months. He has noticed an area on the dorsal surface of each hand, with a peculiar pigmented, dry appearance, tendency to scale; no itching, no burning. The patient is positive that he has never had such a condition before. I have also had such a patient volunteer the information that there was an excessive secretion of saliva. What is the diagnosis? Another similar case, having a marked chronic cholecystitis, presented, besides her intestinal condition, this interesting feature: On her hands and forearms, around her neck and over each cheek, the skin was rather rough and had a reddish-brown tinge (so slight the patient concealed it by the use of powder), and which I do not think was sun-

burn. This patient complained of constant burning in these areas. Several times during the previous year her tongue had been very red and sore for a couple of weeks at a time. Again, what is the diagnosis? Besides the treatment indicated, then, that is, hygienic, correction of diet, feeding some bile salts, etc., add a free diet of green vegetables and fresh fruit juices, and improvement is noticeable and rapid. Such was the case in these two patients.

To summarize, then: The idea is to look upon pellagra as one form of an intestinal toxemia, in itself causing the symptom complex, or possibly making fertile ground for a specific bacillus, which in turn is the direct cause. Treat accordingly, the all-important condition being an abundance of green vegetables and fruit juices.

A good plan, and the one I now follow, is giving eight ounces of fresh fruit juices every four hours. This juice being prepared by macerating oranges, lemons, pineapples, peaches, etc. The fruits themselves may be taken, which makes a very acceptable dish, the only trouble being that the pulp from oranges and pineapples, for instance, may excite a diarrhoea and aggravate pre-existing colitis. No other trouble will arise, though some patients will complain that they cannot take "so much acid," and will have trouble when eating one or two oranges a day, but be perfectly comfortable on above routine. Meat, milk, eggs, plus okra, lettuce, spinach, tomatoes, turnip greens and such comprise the rest of the diet. Rice, grits and raw breadstuffs are prohibited in order to avoid much starch. In this manner a full caloric value can be given. It is a good plan frequently to give dilute nitric acid in twenty-drop doses before each meal; or, to correct hypo-acidity, dilute hydrochloric acid, plus pepsin. The fruit juice is given as regularly and as faithfully as quinine in malaria, regardless of the stomatitis. Wood, writing in *Forchheimer Therapeutics*, advises prohibiting fruit juice while the mouth and tongue are sore. That is the very time when they are needed, and a mouth wash of

Dobell's solution will usually take care of the painful stomatitis. Below is given a characteristic history:

Negro man, 30 years old, came to my office in December, 1911, complaining of diarrhoea, griping, nausea and profuse expectoration. These symptoms had developed about three weeks previous. I immediately thought of pellagra, and advised a dose of castor oil, restricted diet, and told him to go home to bed, and to call me if he did not feel better on the next day. About two weeks later he came to the office hardly able to walk, with digestive condition worse, terrible diarrhoea, tongue raw and red, markedly increased secretion of saliva; on each hand, extending to just above the wrist, with a sharp line of demarkation, was a rough, pigmented erythema, characteristic of pellagra, and a similar condition showing on both feet. The patient told me that his wife also had just about the same trouble that he had, and was too weak to get out of bed. On visiting the house I found her worse than her husband, complaining terribly of the burning of her feet. Examination of the stool in each case showed indigestion of all classes of food, especially pancreatic indigestion; no hookworm, no amebae; there was an abundance of fat droplets and muscle fibre, with striation showing very plainly. These people were put to bed in the same house where they had been living for months past; a negro woman was procured to nurse them; they were given green vegetables of every kind as outlined above, plus fruit juices. The only medication that was given the man was dilute nitric acid in twenty-drop doses, three times a day, before meals. The woman had the same diet and medication, plus codeine and veronal to give her some sleep. Importance of the diet was insisted upon, and they took it faithfully and regularly. Within five weeks' time both were up, the man back at work, and his wife doing the housework. Since that time I have had them under constant observation, and at present they are both weighing more and in better health, according to their own statement, than ever before. They have had no return whatsoever of their trouble.

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PELLAGRA.

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In this short paper it is not the writer's purpose to enter into any discussion as to

the etiology of pellagra. His desire is to emphasize the importance of change of climate and of diet and absolute rest of both body and mind in the successful treatment of this disease.

Be the cause what it may be, a cure is what is most desired, and, he believes, a cure as specific as any cure has been found. The writer's home, in the extreme southern portion of Mississippi, where this disease has been all too prevalent since 1906, has afforded him ample opportunity to observe it in all its forms and phases. Doctors of his home town have kept abreast of the times so far as remedial and dietetic measures are concerned, but their efforts have not been crowned with that measure of success observed in a high, cold climate where the summers are short and cool. Their efforts might have been more successful had they kept up active treatment during the winter months, instead of contenting themselves with tiding their patients over the warmer months to see them die during the second or third summer. It is not, so far as the writer is aware, generally known that a change in climate is the all important element in the successful treatment of pellagra. Bass, of New Orleans, was the first to recognize this, and the first patient sent to Colorado Springs was sent by him, a few years ago, and completely recovered. Since that time Dr. M. O. Shivers, of the above named city, has had under his care a great many severe cases, coming from several of the Southern and Western states. As might be anticipated, these cases came to him in the last stages of the disease and after apparently everything possible had been done for them that could be done in a hot climate.

It was the writer's daily routine to observe nine fully developed cases during his own convalescence from the same disease in Colorado Springs since the first of last July, and the complete recovery of these nine cases is the chief incentive that causes him to write this short paper. He has seen but one death of a pellagrin and this death should have been