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Melanuria in Mental Disease.

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In an examination of microscopic sections of the large intestine, removed by Dr. J. W. Draper from about 170 patients suffering from various types of functional neurosis at the New Jersey State Hospital under the direction of Dr. Henry Cotton, marked pigmentation has been noted as a striking feature in many of the specimens. The pigment in these cases contains no iron, and belongs in the group of melanins. It is sometimes present throughout the entire large bowel, but is usually most marked in the caecum, diminishing toward the sigmoid. On section, the pigment is found as a rule to be confined to the mucosal layer, where it is seen as large polyhedral cells with a yellowish brown stippling. It does not stain by the Prussian Blue method. Pigmentation of this type is generally regarded as a sign of intestinal deterioration, and is not infrequently seen in the bowels of those who have suffered from long continued intestinal stasis and intoxication.

Sometimes the epithelial cells themselves are the site of this pigmented deterioration. But more often the yellowish brown polyhedral cells lie in columns in the lympho-reticular tissue, frequently in close proximity to the minute blood vessels. In one instance a pigment cell has been observed lying within the lumen of a small vessel which perforated the *muscularis mucosae* and terminated in the reticular substance of the mucosal layer. These observations suggested the possibility that the pigment in the type of case under consideration might reach the circulation, and should therefore be sought in the urine.

Urinary examinations for the detection of melanuria have been made in 300 patients suffering from various types of mental disease, but otherwise free from disease which might be expected to produce melanuria. The technique used was that employed by Haden and Orr, which was based on the recommendations of Helman.[1] Three reactions in sequence must be demonstrated to prove the presence of melanin: (a) the addition of ferric chloride gives a brown or black precipitate, which (b) dissolves on the addition of sodium carbonate and from which (c) a brown or black amorphous powder is precipitated on the addition of a mineral acid.

In the 300 cases examined, melanin in quantity was five times found in the urine, an observation not previously made in this type of disease. Since a large percentage of patients suffering from mental disease has been proven by pathological studies to present marks of advanced cellular deterioration in their large bowels, since this deterioration is often characterized by a striking degree of melanotic pigmentation, and since the possibility that this pigment enters the circulation has been established by microscopic investigation one explanation of the presence of melanuria in the patients examined which must be seriously considered is that the pigment reached the urine from the bowel. If this explanation proves to be correct melanuria may be found to be an important clinical sign of intestinal deterioration. It is important in this connection to note that Haden and Orr have observed melanuria in intestinal obstruction.

The work here reported is part of an intensive study of the relation of intestinal infection to systemic disease, now in course in the Department of Hygiene at Cornell University Medical School in conjunction with Professor Torrey and Dr. Kahn; and the pathological material was obtained from the Pathological Laboratory of the New Jersey State Hospital.

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[1] *Johns Hopkins Hospital Bulletin*, 1924, xxxv, 58.