CASE I.—Captain C., aged 33, who had been inoculated, was admitted on September 20th, 1900, suffering from enteric fever. He had been ailing for some weeks, and had been ill and delirious for four days before admission. He was given 10 grs. of urotropin in water three times a day. About two days later he complained of some pain and difficulty in micturition. On September 27th blood was passed in the last portion of the urine. On September 28th blood was seen oozing from the meatus; the urine was smoky in appearance and not scanty in amount. The administration of urotropin was stopped, and potassium bicarbonate and tincture of hyoscyamus given instead. A little more blood was passed the same evening. On September 29th there was no pain on micturition and no blood in the urine.

CASE II.—Lieutenant Y., aged 24, who had been inoculated, was admitted on September 21st, 1900, suffering from enteric fever. He had been ailing a few weeks, and had been ill in bed for two days prior to admission. He was given 10 grs. of urotropin in water three times a day. On September 27th he had some pain and difficulty in micturition. On September 28th blood appeared in the urine, actual clots being seen. The urotropin was stopped, and potassium bicarbonate and tincture of hyoscyamus were given instead. The next day the symptoms were much alleviated and soon disappeared.

The occurrence of hæmaturia in 2 cases admitted on successive days after urotropin had been given for eight days, and its rapid subsidence after the drug was stopped, is too striking to be a mere coincidence. Hæmaturia resulting from nephritis in enteric fever is not unknown,⁴ but in such cases urotropin appears to be beneficial. In my cases the bladder would seem to have been the source of hæmorrhage.

This untoward effect of urotropin cannot be common. Out of 82 cases of enteric fever treated at the Metropolitan Hospital during the last winter urotropin was given in 13. In one of these hæmaturia occurred, but the patient was taking turpentine at the same time.

Discomfort, which preceded the hæmaturia in both my cases, should be considered a danger signal when employing urotropin.

REFERENCES.

¹ Goulstonian Lectures, 1900, *Lancet*, April 14th, 1900. ² Suter, *Lancet*, February 23rd, 1901. ³ Mogli, *Il Politecnico*, January 19th, 1901. ⁴ Horton-Smith, *op. cit.*

A FATAL CASE OF HÆMATOPORPHYRINURIA.

By HENRY WALDO, M.D., M.R.C.P.,
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THE following case illustrates the necessity of care in the administration of sulphonal.

History.—A male patient, aged 33, single, one of those unfortunate people not obliged to do anything, consulted me for dyspepsia and giddiness. He fancied he could not sleep, and so had been in the habit for some years of taking hypnotics of different kinds, but chiefly sulphonal. A few days later he developed much pain and tenderness over the stomach, attended with nausea, vomiting, and constipation. He was at the same time slightly delirious at night (no drugs were taken), and he gradually passed into a condition resembling delirium tremens. The gastritis entirely passed off, and in ten days he was able to take a fair amount of food by the mouth. A few days from the onset of his illness it was noticed that his urine resembled port wine in appearance, and smelt like chlorodyne, while another specimen smelt like celery. The fœtor was most disagreeable and resembled that noticed in chronic renal disease.

State on Examination.—The urine contained no albumen, and the guaiacum test gave no sign of blood. The microscope showed nothing but a few crystals of uric acid. The spectroscope showed bands corresponding to those produced by hæmatoporphyrin. (See figure.) The radial artery was a little thickened, and the pulse, which was 80 per minute at the beginning of his illness, gradually increased to 180. He became tremulous, restless, and violent. This was succeeded by a vacant aspect and prostration, in fact, by general paresis, in which the sphincters participated. Although skilfully nursed, a bed sore formed over the sacrum. The temperature varied from 99° to 104°. The retina appeared to be normal. The patient could not swallow, but retained ample nourishment given through a nasal tube. The abdomen was sunken, and the diaphragm scarcely moved.

Four days before death general convulsions occurred, which were epileptic in character, and continued at short intervals till the end. During this time the patient was unconscious, quite pulseless, and a very feeble single heart sound, only audible at the lower part of the sternum, was all that indicated cardiac action. No urine was passed for forty-eight hours, and the bladder appeared to be empty. No headache was complained of all through the illness, which consisted of ten days of symptoms of acute gastric irritation, and two weeks with cerebro-spinal symptoms and progressive toxic paresis. No post-mortem examination could be obtained.

Hæmatoporphyrin has been observed in the urine in small quantities only where no sulphonal has been taken, as well as in the course of other diseases, namely, rheumatism, pneumonia, enteric fever, and peritonitis. In the sulphonal cases the symptoms are said to depend not so much on the direct action of the sulphonal itself as on chemical changes, almost certainly alimentary in the first place, and probably hepatic, of which the sulphonal has been the exciting cause.

Dr. Keith Campbell, who published a fatal case of hæmatoporphyrinuria in the *Journal of Mental Science* for April, 1898, where only 30 grs. of sulphonal had been taken in two doses, says that the pathological changes which produce this pigment are as yet obscure.

Professor Young, F.R.S., of University College, Bristol, and Mr. Stoddart, Public Analyst for Bristol, tell me that the spectroscope is the most reliable means of detecting hæmatoporphyrin in urine.

Dr. Stack, House-Physician to the Bristol Royal Infirmary, kindly undertook the investigation, and the accompanying chart (see figure) shows the result he obtained. Professor Stanley Kent, of University College, Bristol, and Bacteriologist to the Bristol Royal Infirmary, has kindly made the following remarks: "Hæmatoporphyrin as prepared in the laboratory exhibits two different spectra according to whether the solution examined is acid or alkaline in reaction.....When the bands of hæmatoporphyrin are visible in a pathological urine, the spectrum seen is not that of the acid modification of the pigment, such as would have been expected from the fact that the urine is an acid fluid, but that of the alkaline modification.....And a solution of the pigment showing the acid spectrum, if added to urine, at once changes its character, and shows the alkaline bands.....Another interesting point is that this pigment is iron-free, that it is probably produced from the pigment of the blood which contains iron, and that its appearance in the urine seems sometimes to be associated with derangement of the functions of the liver and spleen, organs normally concerned in the pigment metabolism of the body."

The epithelial cells in the cortices of the suprarenal capsules have been shown by Dr. W. F. Robertson to have undergone a marked degenerative change over numerous large areas, consisting of the replacement of the protoplasm by clear globules. These globules, which varied considerably in size, did not give a fatty reaction with osmic acid. There was no evidence of any tuberculous disease. These degenerative changes are evidently the same as those that are so commonly to be observed in the adrenal epithelium in various diseases. Yet it has been suggested that suprarenal extract should be given.

HIBERNATION OF ANOPHELES IN ENGLAND.

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SINCE the appearance of our *Studies in Relation to Malaria*,^{1 2} two publications have appeared relating to the hibernation of *Anopheles* in this country. I refer to the papers by Wright,³ and by Annett and Dutton.¹

That certain culicid larvæ are capable of living beneath the ice has already been noted by Gorham in the United States.