

test, but not with the spectroscope. The sp. gr. has usually been about 1015.

The temperature has been normal throughout. There have been no retinal hæmorrhages, but occasionally small subcutaneous hæmorrhages have appeared on the hands. A hæmic murmur developed at the pulmonary cartilage shortly after admission, and the pulse has at times been intermittent. The gastric contents have persistently shown an absence of free acids. The weight has increased to 133 pounds.

The treatment, in addition to cardiac tonics, consisted in the administration of arsenic, beginning with m. ii. Fowler's solution t.i.d. and increasing the dose by m. i. daily until m. xvi. were given, when it was omitted for two days on account of vomiting, and then recommenced with a dose m. xv. t.i.d., which has been continued to the present.

A glycerin extract of bone marrow in doses of ʒii. to ʒiii. t.i.d. was begun on March 1st in addition to the arsenic. The results of treatment have, as in the first case, been unsatisfactory, the blood conditions being precisely the same as on admission.

P.S.—This patient developed great anasarca of the lower extremities, double hydrothorax and dyspnoea, obviously of cardiac origin, and died April 7th.

Autopsy performed by Dr. Wyatt Johnston showed a moderate quantity of fluid in the pleural cavities. The heart was much enlarged on both sides and the right distended with blood. Œdema and slight emphysemata of the lungs.

*Kidneys*—Left slightly enlarged, capsules adherent and a few cysts present.

Prostate presented two adenomata projecting into the bladder.

The liver was rather small, and on section the veins were prominent. The spleen was large and firm.

The mucosa of the stomach was soft and the organ contained a pint of curdled matter. The red marrow of sternum, ribs and vertebrae was increased. On microscopic examination pigment was found about the central vein. No iron reaction and no pigment in peripheral zones.

Stomach on microscopic examination showed a loss of the superficial part of the mucosa from post-mortem digestion, but the glands in the deeper portion of the mucosa were normal in every respect, presenting neither atrophy, increase in connective tissue, nor alteration of the epithelium.

The lemon tinge of skin present in both cases was extremely suggestive of pernicious anæmia.

The diagnosis of the first case rests chiefly on the condition of the blood, together with an absence of any of the usual causes for a second

dary anæmia. The blood counts invariably showed a relative excess of hæmoglobin, a sign which is usually present in the pernicious form of anæmia. The marked irregularity in shape and size without increase of the white cells is also very characteristic. The presence of nucleated red cells, which has been insisted on by some as essential in the diagnosis of pernicious anæmia, are in my experience rather the exception than the rule. In five cases under my observation in which they have been carefully looked for they were present only in one. The splenic enlargement present in this case is rather exceptional, although it is a well recognized feature of the disease.

The presence of pathological urobilin is an important diagnostic feature, and urine of high color and low sp. gr. is also suggestive of the condition.

The absence of free hydrochloric acid from the gastric contents at first raised the question of the possibility of carcinoma of the stomach being the cause of anæmia. The absence of pain, of tumor, of hæmatemesis and of persistent vomiting, together with the relative embonpoint of the patient, were decidedly against this view, and the absence of progressive emaciation during the past three and a half months also bear out the original diagnosis. A leucocytosis, again, which is commonly present in cancer, was here absent.

In the second case the diagnosis of pernicious anæmia in a patient with arterial sclerosis and dilated heart, made during life, was not borne out by the results of the autopsy. The deposit of iron in the liver was absent, and only the ordinary senile pigmentation in the centre of the lobule was found.

Hüfler, quoted by Ewald, records a number of cases where hydrochloric acid was absent in cases of valvular disease, and it may be that this was the cause here. Such a degree of anæmia, with marked poikilocytosis must, however, be unusual in cardiac disease, and the kidneys were so slightly affected that the anæmia of renal disease was hardly possible. Whether any relation between anæmia and absence of hydrochloric acid exists can only be determined by further observation. The case under consideration is, however, not one of anæmia associated with atrophy of the gastric tubules.

The absence of such an important constituent as hydrochloric acid does not seem to have caused any serious gastric disturbance in either case. We may perhaps assume that compensation is effected by the pancreas.

In the first case, nausea, occasional vomiting and heart-burn began apparently coincidently with the onset of the symptoms of anæmia, and in the second case such symptoms were entirely absent.

It is well known that the weight and general nutrition are usually retained in the sub-