NOTE ON THE TREATMENT OF PERNICIOUS ANAEMIA.

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DURING the past year I have met with two cases of advanced pernicious anaemia in which, after a certain degree of improvement had taken place under arsenic, arrest of the improvement occurred, and in which the administration of iron was then attended with very marked and rapid alteration for the better.

It has for long been recognized that in typical cases of pernicious anaemia, in which the colour index is above the normal and each individual red blood corpuscle contains more than the normal amount of haemoglobin, the administration of iron is usually unattended with benefit, and is in many cases apparently injurious. This certainly has been my own experience; but I have met with some exceptions, amongst which the two cases to which I have just referred are perhaps the most striking. The notes of one of the two cases are as follows:

Mrs. P., aged 54, was admitted to the Edinburgh Royal Infirmary on September 1st, 1908, complaining of weakness, bleeding piles, and swelling of the feet.

History.

The patient stated that she had been a strong, healthy woman until three years previously; she then had an attack of what she termed "jaundice"; this lasted for seven weeks; she has had two other attacks of the same sort since, the last about a year ago. For thirteen years she has been troubled off and on with bleeding piles; for some months before her admission to hospital the piles had been worse.

Condition on Admission to Hospital.

Temperature 99.2°, pulse 108, respirations 32; extremely pale and anaemic. The face had a yellow tinge, but there was no jaundice; the feet were swollen. The patient was not emaciated, but stated that she had lost a good deal of flesh lately.

The blood showed all the characteristic features of advanced pernicious anaemia. The red corpuscles numbered 545,000 per cubic millimetre, the haemoglobin equalled 15 per cent., the colour index was 1.2, the white corpuscles numbered 3,800 per cubic millimetre. The differential count was as follows: Polymorphs, 73 per cent.; small lymphocytes, 19 per cent.; large lymphocytes, 7 per cent.; eosinophiles, 1 per cent. The red corpuscles showed marked poikilocytosis; no normoblasts or megaloblasts were found.

The appetite was poor; the patient complained of thirst. The bowels were constipated. All the teeth were absent. The patient stated that she had had no teeth for three years, and that she had for a long time only had one or two teeth; she further stated that she had not suffered from dental caries or from a sore mouth; her teeth simply dropped out, and did not decay.

The tongue was slightly furred; the liver was considerably enlarged, projecting $3\frac{1}{2}$ in. below the costal margin; the spleen was somewhat enlarged.

The patient was very short of breath and suffered from palpitation, and at times faintness. The pulse was 108, soft and weak; the blood pressure 120. Blowing systolic murmurs were heard in all the cardiac areas, most marked at the apex.

The urine contained a trace of albumen but no casts or other abnormal constituents.

There were no haemorrhages in the retina; the fundus oculi was pale, the optic discs normal.

Treatment.

Gradually increasing doses of arsenic, commencing with 2 minims of Fowler's solution three times daily, increased every fourth day by 1 drop. The maximum dose which the patient was able to take was 10 drops three times daily.

Progress and Result.

Under this treatment great improvement rapidly took place. On October 1st, the patient was looking and feeling very much better, and the condition of the blood showed a marked improvement—the red corpuscles were 1,800,000, the haemoglobin 50 per cent., the colour index 1.2. From October 1st to November 10th, although the general condition improved, there was no alteration in the state of the blood. On November 11th Robertson's Bland's pill capsules—one No. 3 capsule (equal to three Bland's (pills) three times daily—were prescribed. Under this treatment striking improvement in the condition of the blood immediately took place. On November 20th, the red corpuscles equalled 3,000,000, the haemoglobin 60 per cent., and the colour index 0.9. On November 21st the patient was discharged from hospital, and advised to continue the iron. On January 13th, 1909, when she was last seen, she stated that she was perfectly well. She looked very well—many years younger than on her admission to hospital. The blood examination showed the red corpuscles 4,100,000, the haemoglobin 65 per cent., and the colour index 0.7.

It is important and interesting to note that the iron produced a marked and rapid increase in the number of red corpuscles, and that after the administration of iron the colour index fell from 1.2 to 0.8.

Table showing the Condition of the Blood at different Dates.

	Red Blood Corpuscles.	Haemoglobin.	Colour Index.	White Blood Corpuscles.
		Per cent.		
September 3,* 1908 ...	545,000	15	1.2	3,800
" 6, " ...	580,000	16	1.2	—
" 12, " ...	890,000	25	1.2	3,600
" 16, " ...	1,200,000	30	1.2	—
" 29, " ...	1,600,000	40	1.1	2,200
October 6, " ...	1,900,000	45	1.06	3,200
" 16, " ...	1,800,000	50	1.2	5,500
" 29, " ...	1,800,000	45	1.1	3,000
November 3, " ...	1,600,000	45	1.2	3,200
" 10,† " ...	1,800,000	50	1.2	6,000
" 20,† " ...	3,000,000	60	0.9	5,000
December 2, " ...	2,900,000	55	0.8	—
January 13, 1909 ...	4,100,000	65	0.7	7,600

* Arsenic prescribed.

† Iron prescribed.

‡ Patient discharged from hospital on November 21st.

The fact that the patient had had no dental caries and no glossitis and that there had been no oral sepsis is an interesting point. I have met with and recorded some other cases of pernicious anaemia in which the same fact has occurred. I consequently doubt whether oral sepsis has the important influence in the production of the disease which some authorities have suggested. I am disposed to think that the glossitis from which many patients who are affected with pernicious anaemia suffer is a consequence rather than a cause—due, presumably, to the same toxin, whatever it may be, which is the cause of the anaemia.

SOME REFLECTIONS REGARDING THE FREE USE OF BACTERIOLOGICAL CULTURES FOR THE DESTRUCTION OF RATS AND MICE.

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OWING to the general use of certain microbic cultures for the destruction of rats and mice, field mice, rabbits, and other small rodents, the question of a possible danger which these cultures may present with regard to the health of human beings has lately been raised.

The destruction of vermin is of course most important, both from a hygienic and an economic point of view. Rats and mice are the principal propagators of the plague, and probably of many other contagious diseases; we know, also, that rats and mice in warehouses, etc., and mice and voles in the fields, are often the cause of enormous damage. In France, for example, in the year 1903, field mice did nearly a million pounds worth of damage to the crops, and the scourge was only stopped by applying in the fields a virus prepared at the Pasteur Institute in Paris at the request of the French Government. In Great Britain, according to recent estimates, the damage caused by rats amounts to as much as £10,000,000 per annum.

It is incontestable that the introduction of raticide viruses has played a most important part in the campaign against these animals, nor must we forget that the application of these bacteriological methods for practical purposes is only of recent date, and that they have not yet been brought to complete perfection. It will readily be admitted that it is only since the introduction of these methods that the systematic and scientific study of the destruction of rodents has begun, and that it is solely by persevering in this direction, and by taking advantage of