level is present, equivalent to the hysterical contractures and palsies seen in the war-neuroses.

11. The nystagmus, as well as the other signs and symptoms, is temporarily benefited by psychotherapy.

12. It is suggested that, in the future, treatment should resolve itself into that of—

(*a*) Exclusion from the industry of all men predisposed to neurosis of any kind.

(*b*) Improved methods of illumination at the coal-face.

(*c*) Psycho-therapeutic treatment of those already affected.

(1) Llewellyn, *Miners' Nystagmus*, pp. 4, 5.—(2) *Idem., op. cit.*, p. 23.—(3) *Idem., op. cit.*, p. 5.—(4) *Idem., op. cit.*, pp. 7 and 134.—(5) *Cf.* Stassen, *La Fatigue de l'appareil Visual*, p. 208.—(6) *Llewellyn, op. cit.*, pp. 98 *et seq.*—(7) *Idem., op. cit.*, Chap. I.—(8) Ernest Jones, *Papers on Psycho-analysis*, Glossary.—(9) *Idem, Treatment of the Neuroses*, pp. 41 *et seq.*—(10) Out of 1,000 cases of war-neuroses which the author has examined 9 had irregular nystagmoid movements of the eyes in the absence of signs of organic nervous disease. *Vide* Culpin, *The Nervous Patient*, p. 206.—(11) Llewellyn, *op. cit.*, p. 133.—(12) *Idem., op. cit.*, p. 19.—(13) *Idem., op. cit.*, p. 94.—(14) W. S. Inman in Culpin's *The Nervous Patient*, Chap. XVI, p. 216.—(15) If a person suffering from organic disease of some particular organ begins to suffer from a psychoneurosis, symptoms referable to the affected organ will be prominent among those of the psychoneurosis.—(16) A close parallel is to be seen in the war-neuroses in cases where an hysterical paraplegia, contracture or other symptom serves to remove the man from an intolerable environment by rendering him incapable of carrying on. *Vide* Culpin, *The Nervous Patient*, pp. 175 *et seq.* Writers' and telegraphists' cramp afford an exact parallel.—(17) Stassen, *op. cit.*, p. 207. Llewellyn, *op. cit.*, Preface, p. viii.

Clinical Notes and Cases.

A Case of Pellagra. By T. M. Davie, *M.C.*, M.D., Assistant Physician, The Royal Hospital, Morningside, Edinburgh.

Mr. C— worked for over twenty years as a maltman in a local brewery. The work was very hard and particularly trying owing to the great heat, and to the dust from the barley which, many a time, he says, almost choked him. It may be of interest to note that not only did he often chew barley, but occasionally would chew maize, which also was used in the brewery.

About ten years after his marriage he gave up this work as he felt himself no longer fit for it. His married life was apparently a happy one, and he has five healthy children, aged 12 to 25. For fully fifteen years he has suffered from what he calls "rheumatic pains," which chiefly affect his legs, and he sometimes needed a walking stick. Apart from a poor appetite he otherwise enjoyed moderately good health. If he had porridge for breakfast that sufficed him. If not, he would take a cup of tea, half a slice of bread, and perhaps an egg. His midday meal consisted of soup, a

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small portion of meat and potatoes, and generally a vegetable. His evening meal was generally a cup of tea, with bread and butter and perhaps a small portion of fish. He never ate fruit, and disliked butcher's meat of any kind, only partaking of it very sparingly at times. He took alcohol in moderation and infrequently.

Towards the end of November, 1923, at the funeral of his brother-in-law, he became dazed and unable to walk, and was taken home and seen by his doctor, who said he had had a slight shock. After some weeks he became much worse. He complained of the smell of noxious gas in the room; spoke of hearing wireless messages continually buzzing around him. He became restless and very difficult to manage, said that his identity had been stolen and accused his wife of meaning to harm him. He soon became unmanageable, and was removed on January 9, 1924, to Ward 3 of the Royal Infirmary, where he remained for seven weeks, after which he was certified and brought to the West House on February 24, 1924.

In the infirmary Mr. C— was very depressed. He had lost all taste for things, he said, and was quite content to meet his fate, but never expressed any suicidal tendencies. He said that his wife had been trying to get rid of him by means of gas poisoning. He showed considerable confusion, and was disorientated as to time and place. Physically there was little to note. The pupils were equal, but rather sluggish. Knee-jerks were exaggerated. The Wassermann reaction was negative both in the blood and the cerebro-spinal fluid.

When admitted to West House, he was 58 years of age. Looked ill and exhausted. He was markedly disorientated and confused. He had hallucinations of sound and smell, and fleeting delusions, and was in a state of considerable anxiety and depression. There was considerable stiffness of the legs. Knee-jerks were exaggerated though difficult to elicit. There was abnormal sensitiveness of the soles of the feet, but no Babinski. Epigastric reflexes were very brisk, and he complained of pain in the adductor muscles of the thigh, high up.

Progress.

He was kept in bed in the verandah, and it was not long before he began to show some bodily improvement. Within a month of his admission the hallucinations had almost disappeared. The confusion was much less and he was better oriented. With the departure of the confusion his depression became more pronounced. He said that he would willingly end his life, but lacked the courage. He lay in the verandah all summer. It was in August that Prof. Robertson, observing the pigmentation on the back of this patient's hands, suggested that the condition was pellagra. The backs of the hands were glossy and of a yellowish-brown colour. They looked as though they had been varnished. The pigmentation was symmetrical. On rubbing this gently with oil one could see a salmon-pink colour underneath. The face also showed a similar pigmentation, but to a less degree. No erythema had preceded this, nor had the patient ever had a

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similar discoloration before. Dr. Cranston Low confirmed the diagnosis as that of pellagra. Attention was now specially directed to providing the patient with a diet rich in protein and in vitamines. This was supplied in the form of Bovril, cod-liver oil, fruit and green vegetables. He protested against this addition to his diet, and saw in it only a new species of torture.

By the beginning of November the brownish pigmentation of the hands and face had almost disappeared. Towards the close of the year patient suffered from intermittent attacks of diarrhœa. At this time no inflammation of the mouth and fauces was present.

1925: In the beginning of the year the general routine was that the patient spent his mornings in bed, getting up in the afternoons, when he walked about slowly, showing considerable spasticity. Several investigations have to be recorded.

Examination of the blood.—Reds, 3,100,000; whites, 4,200; hæmoglobin, 50%; colour index, ·8; differential count—polymorphs, 50·6% (neutrophiles 44%, eosinophiles 6·6%); lymphocytes, 48%; large hyaline, 1·4%. A relative lymphocytosis was present.

Dr. W. Susman reported that the red blood-corpuscles showed in many cases definite well-defined colourless homogeneous areas of degeneration. A large number were disintegrating.

Urine.—There were no abnormal constituents and a specimen proved sterile. A renal function test was also carried out and showed considerable impairment of function. The urine was drawn off and 500 c.c. water given. 6 mg. of phenosulphonephthalein were injected. One hour after injection 70 c.c. of urine were passed. 11·5% dye recovered (*cf.* healthy average 50%). Two hours after injection 112 c.c. of urine were passed, 16·8% of dye recovered (*cf.* healthy average 20 to 25%). Total for two hours, 182 c.c. urine; 28·3% dye (*cf.* healthy average 75–80%).

In June a small ulcer on the right side of the tongue was observed, which only caused discomfort when orange-juice or some such acid drink was taken. In the summer months there was no return of the pigmentation of the skin in spite of prolonged exposure to the sun. Patient's weight on admission was 7 st. 5 lb. By the end of 1924 it had increased to 8 st. 1 lb. It declined again to 7 st. 5 lb. in February of this year, but again rose and is at present 9 st.—the highest yet recorded.

There has been little change in the mental state since the departure of the acute confusional state. The patient says he feels very miserable, and would be much better dead. He blames us for his condition and says we just play with him as a cat with a mouse. His expression is one of resigned misery. His skin is slightly yellowish and parchment-like, his forehead wrinkled and his eyes gaze into distance. This far-away look is frequently described in this disease. The ulcer soon took on definite characters of a growth. It slowly extended, to involve the area of the right tonsil. There was no resulting glandular enlargement. Only recently has it given rise to discomfort in the form of earache. Surgical opinion had been

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sought regarding this condition. The growth was considered to be of epitheliomatous type, but operation was not desired by his wife.

The knee-jerks are difficult to elicit, equal and diminished. The plantar responses are normal, with the exception that the left has on one or two occasions been ambiguous. A true Babinski has never been elicited. There are no sensory disturbances.

Dr. R. Carmichael reports that the blood picture is now—Reds, 3,660,000; hæmoglobin, 40%; colour index, ·55. Whites: polymorphs 6,000; mononuclears, 3,600; total, 9,600. Differential count. Polymorphs: 62·3%; neutrophiles, 57·5%; eosinophiles, 4·1%; basophiles, ·1%; neutrophiles, myelocytes, ·6%. Mononuclear: medium, 26·7%; small lymphocytes, 5·7%; large hyaline, 5·3%; total, 37·7%.

Red cells vary slightly in size and are pale in centre, resembling those found typically in a chlorosis.

Soon after, the cervical glands were invaded and became rapidly enlarged and indurated. There was progressive weakness and emaciation, and the patient died some weeks later with a broncho-pneumonia.

Such a case is of great interest. Opinion is still divided regarding the ætiology of this disease. The general trend of opinion is in favour of ascribing the cause to a deficiency of animal protein intake. It is curious to find that this patient was in the habit of chewing maize, but it must also be noted that his dietary was for long deficient, especially in animal protein. In 1921 Prof. Robertson had four cases under treatment in this institution; and again in 1924 there were four cases under treatment, including three women.

In 1909 a Shetland girl in this institution was found to be suffering from pellagra. The case was described by Dr. Dods Brown and Dr. Cranston Low (1). It was the only example of undoubted pellagra then known to have occurred in this country during a period of forty-three years. Only one other undoubted case had ever been reported, and this was described in 1866 by Dr. Howden of the Montrose Royal Asylum.

A number of cases have since been reported, scattered all over the country, particularly in mental hospitals. Probably many cases are undiagnosed. The date of commencement of the pellagrous attack is unknown, but is considered by Miller and Ismail (2) to be about the age of puberty.

I am indebted to Prof. G. M. Robertson, Physician Superintendent, for his help, and for permission to publish this case.

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