

## THE TREATMENT OF MENTAL DEFECTIVES WITH ANEURIN FOR ONE YEAR.

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IN a previous article (Rudolf, 1949) an account was given of the results of treatment of 90 defectives with 3 mgms. of aneurin daily for a period of six months. The patients had been resident in Hortham Colony for periods of from 3 to 17 years. None had shown any improvement for at least one year prior to the beginning of the treatment.

The present article deals with the treatment of 41 of the cases for a period of one year. All these patients, at the end of six months' treatment, showed improvement in one or more of the four aspects of behaviour in the lodge, behaviour at school or work, social age or intelligence quotient. Details of the selection and types of cases, methods of observation, types of tests used, etc., will be found in the article to which reference has already been made.

Results are seen in Table I, which shows that 24 cases improved at the end of both the first and the second six months of treatment in behaviour in the lodge, at work, in social age or in intelligence quotient.

Improvement in the first six months did not continue during the second six months in the same subject in 17 cases.

The patients who improved in their lodge or in their work by the ends of both the first and second periods of six months changed as below :—

No. 8.—At end of first period was taking more interest in her surroundings; by the end of the second, was able to sit up.

No. 12.—At end of first period was taking more interest in his surroundings; by the end of the second, was moving more freely and more actively.

No. 35.—Improved in his reading by the end of the first period, being able to read 3-lettered words. At the end of the second period he could read words of 4 letters, had learned to multiply and to give change. In the lodge, general behaviour had improved and he was less restless.

No. 36.—At the end of the first period he had improved in his talking and was taking a greater interest in Montessori apparatus. This improvement continued during the second period.

No. 39.—In the first period, improvement occurred in both reading and arithmetic. At the end of the second period, he could add without the help of counters, necessary at the end of the first period.

No. 42.—At the end of the first period, he had become more contented, less noisy although speaking more, and was taking a greater interest in his surroundings. At the end of the second six months he was more active. He now used a duster and a floor polisher and chased others in play, something he had never previously done.

No. 48.—He was happier, less boisterous and his tempers were decreasing at the end of the first six months. Slight improvement had taken place in his work. By the end of the year, no further evidence of impulsiveness or hot temper had

TABLE I.—*Improvements in the lodge, at work and in tests of cases treated for one year, at six monthly and 12 monthly intervals*

Patient's No.	Lodge		Work		S.A.		I.Q.	
	6 mos.	12 mos.	6 mos.	12 mos.	6 mos.	12 mos.	6 mos.	12 mos.
8 ..	+	+	o	o	—	+	—	—
10 ..	+	—	o	o	—	—	—	—
12 ..	+	+	o	o	—	—	—	—
16 ..	+	—	o	o	—	—	—	—
20 ..	+	—	o	o	—	—	—	—
25 ..	—	—	—	—	+	+	—	—
27 ..	—	—	—	—	+	+	—	—
28 ..	—	—	o	o	+	—	—	—
29 ..	—	—	o	o	+	+	—	—
33 ..	—	—	—	+	+	—	—	—
35 ..	—	+	+	+	—	+	+	+
36 ..	—	—	+	+	+	+	—	+
39 ..	—	—	+	+	—	+	—	+
40 ..	—	—	—	—	+	+	—	+
41 ..	—	—	—	—	+	+	—	—
42 ..	+	+	+	+	+	+	—	—
44 ..	—	—	—	+	—	+	+	—
45 ..	—	—	—	—	+	—	—	+
46 ..	—	+	—	+	+	+	—	—
47 ..	—	+	—	+	—	+	+	—
48 ..	+	+	+	+	—	+	—	+
49 ..	—	—	—	—	+	+	—	—
50 ..	—	—	—	—	+	+	+	+
51 ..	+	+	+	o	+	+	o	o
55 ..	—	—	—	—	+	+	+	—
56 ..	—	—	o	o	+	+	o	o
60 ..	—	—	—	—	—	+	+	+
62 ..	+	—	+	—	+	+	—	—
63 ..	—	—	—	—	+	—	—	+
65 ..	—	—	—	—	—	—	+	—
66 ..	+	—	+	+	—	+	+	+
68 ..	—	—	—	+	+	+	+	—
73 ..	—	—	o	o	—	+	+	+
74 ..	—	—	—	—	+	+	+	—
76 ..	—	—	+	—	—	+	+	+
77 ..	—	—	—	—	+	—	—	+
79 ..	—	—	—	—	+	—	—	—
80 ..	+	—	—	—	—	—	—	—
86 ..	—	—	—	—	—	+	+	—
87 ..	+	—	+	o	+	—	+	—
90 ..	—	—	o	—	—	—	+	—
41 ..	12	8	10	11	23	27	15	13

+ = Improved    — = Not improved    o = No work or test

been observed. He had become very willing, quiet and well-behaved. He was working well outside the Colony.

No. 51.—At the end of the first six months, no violent outbursts had occurred. He was brighter and more alert. He had become more friendly and worked in the lodge without being prompted. By the end of the first year, he was brighter, even more active and mixed still more freely with the others.

No. 66.—At the end of the first six months, he was better able to understand instructions. He had become eager to learn to read and write. He was more alert, more active and showed a slight improvement in his work. At the end of the year he had improved considerably at his work in the Stores. He was now willing, eager to help and cheerful.

Most of the changes were in the direction of an increase in mental activity but, in some instances, this increase was too great and uncontrolled as the following cases illustrate :—

No. 27.—No change was noticed at the end of the first six months, but by the end of the year, he had become extremely troublesome and spiteful.

No. 29.—During the first six months the condition showed no change but in the second half of the year, he became noisy and troublesome. He now scratched himself when in a temper and his grimacing, present before treatment, became more marked.

No. 32.—Although no change occurred during the first six months in the lodge, he deteriorated at school. During the second six months, he remained stationary in both lodge and school.

No. 40.—In the first six months, he became noisy and a nuisance to others, but showed no alteration at his work. The trouble-making persisted to the end of the year.

No. 42.—No change was noticed in his work in the boot-shop, but he became vicious and aggressive in the lodge during the first six months. Although he was brighter and more active during the second six months, the viciousness and aggressiveness also increased.

No. 44.—He became progressively less responsive during the first and second six months.

No. 45.—By the end of the first half-year, he was more easily upset and a nuisance to others in the lodge, although no change was seen in his work. The alteration in his behaviour in the lodge persisted to the end of the year.

No. 49.—Deterioration at work and in the lodge had occurred by the end of the first six months. This deterioration continued to the end of the year. He became temperamental and stubborn in his work as a tailor's machinist. After 10-11 months of aneurin, aggressiveness developed and he attacked a patient when refused a needle and cotton. He commenced stealing from other patients during the night. When restrained, when in a temper, he burst into floods of tears.

No. 89.—No change occurred during the first half-year, but at the end of the second six-months, she had deteriorated, continually quarrelling and using obscene language.

Although the changes recorded above were for the worse, the extent was insufficient to warrant cessation of the aneurin before the end of the year. In the cases that follow, the over-activity was such that the administration of the preparation was stopped before the end of the year.

(a) At the end of the first six months, this girl had become unbalanced, noisy and was tearing her clothes constantly. This behaviour continued until 3 months after the cessation of the aneurin when she began to behave well, although before the end of the year, she had returned to an unbalanced, noisy state.

(b) He became more noisy and aggressive within a short time of the commencement of the aneurin, which was stopped after 6 weeks. About 3 weeks later a gradual decrease of the noisiness and aggressiveness was apparent. Nine months later, the noisiness and bad temper were occasional and then only when he was annoyed by another patient.

(c) Although no deterioration was noticed in his work, he became more hot-tempered within a week or two of the commencement of the aneurin, which was stopped after 6 weeks. Two to three weeks later a gradual improvement began. During the following 9 months no aggressive acts occurred and the bouts of temper decreased in frequency. In this instance, the number of staff had been increased in the lodge, with a consequent increase of supervision, which may have been partly the cause of the decrease in the number of bouts of temper.

(d) He became more destructive, but began to improve about 1 month after the cessation of the aneurin, stopped 6 weeks after its commencement. Some 6 months later, he showed a marked improvement, becoming less noisy and less destructive.

(e) His temper had become worse before the aneurin was stopped, 8 months after its commencement. Two months later, he was less excitable, more rational in his conversation and took a greater interest in social functions.

(f) Within 3 months of the beginning of treatment he became extremely noisy and dangerous to staff and patients. The aneurin was then stopped. Five months later, he was less often noisy and he was less difficult in his general behaviour than before he began the treatment.

(g) For some months previous to the commencement of the aneurin he had become progressively slower and more apathetic. This process continued during the administration of the preparation and, on account of this change, he was removed from work in the general stores in which he had worked for eight years. He began to strike out at others. The aneurin was stopped and he became more tractable and more easily managed again.

These cases show that some patients improved in their behaviour, some became worse, and some showed no change. Of those that became worse, the adverse change ceased after the aneurin had been stopped for periods varying from two weeks to three months, suggesting that vitamin B<sub>1</sub> is stored in the body for some weeks.

As some cases improved, some remained stationary and others became too over-active on similar diets and doses of aneurin, the conclusion seems justified that each patient requires his own particular dosage which must be adjusted, if possible, a few weeks before an alteration becomes imperative, so that no case is likely to become too difficult.

The social ages showed definite improvement as seen in Table II. Improvement occurred in 15 cases, but in one of these the final S.A. was lower than one before treatment was begun. A decrease had taken place, but this became an increase during the administration of the aneurin. The increases are small, varying from .12 years to two years, but, when it is recalled that the S.A.'s had remained stationary or had decreased before the administration of the aneurin, an increase of any size is remarkable. The S.A.'s increased at various levels from .94 years to 10.8 years. The progressive improvement is not likely to be due to the nursing staff taking a greater interest in those receiving the treatment as only 15 of 41 (36.6 per cent.) showed this type of change.

Improvement in social age is not necessarily paralleled by reports of improvement in lodge or work. Of the 15 cases, 12 showed no corresponding reports of improvement in lodge or work; one improved in work only at the end of both the six-monthly periods; one improved in the lodge only and one had improved in both at the end of each period. The Social Maturity Test is a very fine and delicate instrument for recording behaviour and, no doubt, advances in behaviour would be recorded by this test which would be unnoticed in

TABLE II.—*Social ages (in years) of cases who showed increases at ends of both 1st and 2nd six-monthly periods of treatment. Years and months (in numerals) above social ages.*

Patient's No.	1946												1947												1948												1949											
	No.	9	11	12	3	6	7	8	9	11	1	3	4	5	6	7	8	9	10	12	1																											
29	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..																											
27	..	..	..	..	1.3	..	.9	..	.94	..	..	1.2	..	..	..	..	..	..	..	..	..																											
25	..	..	..	..	1.5	..	..	1.3	..	..	..	1.6	..	..	..	..	..	..	..	..	..																											
56	..	..	..	1.77	..	1.77	..	..	1.3	..	1.77	..	1.8	..	..	..	..	..	..	..	..																											
42	..	1.9	..	..	..	..	1.9	..	..	1.9	..	..	..	..	..	1.83	..	..	..	..	..																											
68	..	..	..	2.9	..	..	..	2.9	..	1.9	..	..	..	..	2.8	..	..	..	..	..	..																											
36	..	..	..	..	..	..	3.0	..	2.9	..	..	3.2	..	3.4	..	..	..	..	..	..	..																											
41	..	3.5	..	..	..	..	3.5	..	3.0	..	..	..	..	..	..	..	..	..	..	..	..																											
40	..	4.0	..	..	..	..	4.0	..	3.0	..	..	..	..	..	..	..	..	..	..	..	..																											
46	..	4.2	..	..	..	..	4.2	..	3.0	..	..	..	..	..	..	..	..	..	..	..	..																											
74	..	..	..	4.3	..	..	4.2	..	4.2	..	..	..	..	..	..	..	..	..	..	..	..																											
51	..	4.8	..	..	..	..	..	4.3	..	..	..	..	..	..	..	..	..	..	..	..	..																											
49	..	6.8	..	..	..	..	6.8	..	8.5	..	..	..	..	..	..	..	..	..	..	..	..																											
62	..	..	7.4	..	..	..	..	..	7.8	..	..	8.3	..	..	..	..	..	..	..	..	..																											
50	..	..	..	..	..	10.8	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..																											

Period of treatment.

individuals in a lodge containing 60 or 65 defectives or even at their work. In five cases, Nos. 27, 29, 40, 42, and 49, the S.A. improved but the defective became more excitable or aggressive so that no improvement in general behaviour could be recorded. Nos. 27 and 29 had not become more difficult by the end of the first six months although their S.A.'s had already increased.

Although improvements in the intelligence quotients were recorded, both after six- and 12-months' treatment, the improvements were slight and did not affect appreciably the distribution of the patients according to I.Q.

The number of cases at each intelligence quotient is given in Table III, which shows that the number in the lower I.Q. range, below 50, remained approximately constant, no appreciable number increasing in the quotients. In only six cases did an increase of I.Q. take place at the end of both the first and the second six months.

TABLE III.—Distribution of cases according to I.Q.

I.Q.	A	B	C	D	E
0—	30	32	7	7	7
1—	2	4	0	0	0
20—	7	10	3	6	4
30—	13	9	6	3	7
40—	14	12	9	8	5
50—	9	8	7	6	8
60—	5	7	4	7	4
70—	2	2	1	1	4
80—	4	2	3	1	0
90—	1	0	0	0	1
100—	0	1	0	1	0
Totals	87	87	40	40	40

- A—Previous to treatment (whole series).
- B—After six months' treatment (whole series).
- C—Previous to treatment (part series).
- D—After six months' treatment (part series).
- E—After 12 months' treatment (part series).

SUMMARY.

Experiments of giving 3 mgms. daily of aneurin, in addition to that in the normal diet, to 41 defectives for a year, produced a mental change of some kind in 24 cases. An improvement in behaviour or work occurred in nine cases (21.5 per cent.), the improvement being recorded at the end of the first six months and at the end of the second six months of treatment. A rise in the social age, also recorded at the ends of both the first and the second months in each case, took place in 15 (36.6 per cent.) cases. A number, 16 cases, deteriorated mentally during treatment, but 4 of these showed no change

during the first six months. In seven of these 16 the deterioration was sufficiently severe for the aneurin to be prematurely stopped. In each case, improvement, with cessation of the increased excitement, was observed at periods varying from two weeks to three months after stopping the treatment. In all, except two cases, the deterioration consisted of an increase of activity with uncontrolled behaviour. In the two cases, the patients became more apathetic and disinterested.

A dose of 3 mgms. appears to be too great for some cases, each patient requiring an individual amount producing improvement without over-activity.

My thanks are due to my wife and son who assisted with the records and tabulation. To Dr. J. Lyons, Medical Superintendent of Hortham Colony, I am indebted for permission to conduct the treatment and for his interest in the experiment.

#### REFERENCE.

RUDOLF, G. DE M. (1949), *Journ. Ment. Sc.*, 95.

