COMPARATIVE LUMINAL, BROMIDE, DIET, AND ELIMINATIVE TREATMENT OF EPILEPSY.

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There is much to be found in literature relative to the treatment of epilepsy. The individual so afflicted is severely handicapped for many reasons which are readily understood by those giving the subject consideration. He is generally considered to be in a class by himself in regard to associations, employment, treatment, and prognosis.

A group of fifty male patients varying in age from 19 years to 66 years, with an average age of 41.1 years, and duration of epilepsy ranging from three and one-half years to fifty-eight years preceding treatment, with an average of twenty years during which seizures have taken place in the thirty-seven cases, having reference in records to the time when seizures were first noted, was placed in the infirmary ward of the Grafton State Hospital, and drug and diet treatments were administered for six months, as follows:

GROUP 1. Ten patients received luminal or phenyl-ethyl-barbituric acid, grains one and one-half twice daily for three days, and then grains one and one half once daily for the remainder of
the time with laxatives or cathartics, other than magnesium sulphate, as necessary.

**GROUP 2.** Ten patients received luminal, same dosage as above, with magnesium sulphate, one ounce, twice weekly.

**GROUP 3.** Ten patients received triple bromide, grains fifteen (sodium bromide, gr. five, potassium bromide, gr. five, and ammonium bromide, gr. five) daily with laxatives or cathartics, other than magnesium sulphate, as necessary.

**GROUP 4.** Ten patients received triple bromide, same dosage as above, but with magnesium sulphate, one ounce, twice weekly as cathartic.

**GROUP 5.** Ten patients were kept on a regulated diet with laxatives or cathartics as necessary.

Many of the above patients, before treatment was begun, had been receiving infirmary care, as it was considered advisable, due to their mental or physical condition, or both.

It will be readily understood that the cases have been derived from among those of the more severely afflicted with the syndrome which goes to make up the condition termed epilepsy, as well as being a group of more nearly middle-aged patients.

During a period of twelve months, beginning April 17, 1921, including three months preceding and three months succeeding treatment, 2,502 seizures were recorded, with an average of 4.17 seizures of all types per month for each patient. The total number of seizures per month for each group was tabulated as follows:

In Group 1. April 17th to 30th, 1921, 60; May, 176; June, 91; July, 51; August, 63; Sep-

2
tember, 80; October, 68; November, 66; December, 46; January (1922), 26; February, 30; March, 13; April 1st to 17th, 18.

In Group 2. April 17th to 30th, 1921, 49; May, 72; June, 56; July, 35; August, 40; September, 56; October, 29; November, 28; December, 33; January (1922), 32; February, 33; March, 31; April 1st to 17th, 25.

In Group 3. April 17th to 30th, 1921, 22; May, 48; June, 44; July, 39; August, 31; September, 31; October, 25; November, 21; December, 21; January (1922), 28; February, 19; March, 21; April 1st to 17th, 10.

In Group 4. April 17th to 30th, 1921, 32; May, 61; June, 43; July, 54; August, 37; September, 31; October, 34; November, 40; December, 23; January (1922), 28; February, 19; March, 21; April 1st to 17th, 10.

Group 5. In this last group they received a regulated diet of food material as outlined per capita, forming the usual balanced ration. In addition to this, elimination was afforded by the use of laxatives or cathartics when necessary. The total seizures per month recorded for this group were as follows:

April 17th to 30th, 1921, 22; May, 42; June, 32; July, 22; August, 37; September, 33; October, 33; November, 30; December, 41; January (1922), 27; February, 32; March, 24; April 1st to 17th, 3.

Using the three months' record of seizures previous to treatment as a starting point, it was found that the seizures varied as follows on a percentage basis:

GROUP 1: 351 seizures. The treatment period of six months, 361 seizures, or 50.14%. Post-
treatment observation period of three months, 81 seizures, or 23%.

**GROUP 2**: 201 seizures. Period of treatment, 207 seizures, or 51.49%. Post-treatment period, 111 seizures, or 55.2%.

**GROUP 3**: 133 seizures. Period of treatment, 178 seizures, or 67.4%. Observation period, 88 seizures, or 66.16%.

**GROUP 4**: 156 seizures. Period of treatment, 213 seizures, or 68.26%. Post-treatment period, 64 seizures, or 41%.

**GROUP 5**: 102 seizures. Period of treatment, 199 seizures, or 97.5%. Post-treatment period, 77 seizures, or 75.5%.

All groups showed a few pounds gain in weight, except Group 4, in which there was a shortage of five pounds for the group.

Age of onset was given as infancy in two cases; childhood in three cases; two to five years in five cases; five to ten years in four cases; ten to seventeen years in ten cases; seventeen to twenty-five years in five cases; twenty-five to thirty years in two cases; thirty to forty years in three cases; forty to fifty years in four cases; fifty to sixty years in one case. The remainder were unknown or indefinite.

**ETIOLOGICAL FACTORS.**

Eating cherries, 1; measles, 1; whooping cough, 1; typhoid fever, 1; alcohol, 4. In the organic group, head injury was given as cause of three cases, and four cases hemiplegic. In eleven cases the patient was primarily mentally deficient; history of epilepsy in the family in six cases, insanity in three cases. One case of mental deficiency in family. Other cases unknown or indefinite. There are two diagnoses of epileptic psychosis, clouded states, while the re-
remainder are given as epilepsy with deterioration.

_Luminal Case Report._ C. H., a negro, male, age 36 years, with history of grand mal attacks of epilepsy since seven years of age, of Group 2, appeared to take the treatment fairly well, with a lessened number of seizures, and some indications of drowsiness, with no complaints of ill feeling, was found, forty-one days after treatment was instituted, to have an eruption on the skin which was more pronounced on face, neck and upper extremities, after which luminal treatment was discontinued. Temperature the next day was 99.6°, pulse 82, respiration 20. This eruption, which resembled that of measles at first, was discrete and papular, surrounded by reddish areola and rather firm, spread over the entire body, and during the next few days it receded and disappeared. Also, the temperature became normal, and it was noted that he was in an improved condition. The eruption began to recur about fourteen days following the first appearance. There was evidently itching, though as a result of patient's limited mental capacity, little definite information could be obtained subjectively. The eyelids became edematous and conjunctivitis developed. The mucous membranes of the mouth and throat were reddened, tonsils became swollen; the tongue presented a dry appearance, somewhat swollen, and acute bronchitis symptoms were present. There was no diarrhea or localized tenderness in abdomen. The urine was highly colored, with acid reaction, specific gravity 1.020, trace of albumen, no sugar. Microscopic examination of urinary sediment revealed a few red blood cells and leucocytes, besides many epithelial cells and a few granular casts. The temperature
never went higher than 102.6°, nor pulse over 124. The respirations were generally around 20 and 30 at the greatest. The condition became worse. The spots which were at first separated, more noticeably on the trunk, became confluent. The eruption afterwards took the form of a desquamating eczema, and later had a tendency to ulcerations, with pustular formation. Patient died twenty-seven days after first appearance of symptoms.

_Bromide Case Report_. Case of P. D., of Group 3. A white male, 59 years of age, with history of grand mal attacks of epilepsy of an indefinite duration, and who has been a patient in hospital during the last six years; fairly good physical condition; mentally deteriorated. He declined rapidly during treatment. There was evidence of motor depressant effect as well as lessening of activity of intellectual centers. Heart action affected. There was greater tendency to coldness of extremities, and treatment was discontinued at the end of fifteen days.

_Diet Case_. Case of A. J., of Group 5. Died during a seizure shortly after treatment was completed, and before observation time had expired.

_Bromide Case_. Two cases, A. G., and F. W., of Group 3. Unreliable, as seizures had been rarely noted, and there was none recorded during the entire time.

_Luminal Idiopathic Case_. Case of A. P., of Group 1. Was especially happy, and so he expressed it during treatment. He felt sure he was much improved, and wrote in glowing terms of the treatment which he was receiving. The seizures were fewer in number, he gained in weight, and general condition improved. He was
more inclined to be helpful when possible. When treatment was discontinued, the seizures became more severe, his mental condition became more disturbed, making it necessary to remove him from the infirmary to a more suitable ward. This tendency is noted, to a lesser degree, in a number of other patients following luminal treatment.

Some of the luminal treatment patients appeared depressed and less inclined to mental or physical exertion, which also occurred in a case of bromide administration. In other cases of patients who were delusional or hallucinated the symptoms were enhanced, though it was generally recognized that as a whole the patients did not exhibit disturbed mental states to the degree which occurred previous to treatment. The tendency to violence was not so great.

Bromide cases continued much the same during the post-treatment period as during the treatment period in regard to drug effect. Bromism was found in the greater number of patients following treatment, and in a few cases dementia, which was present at the beginning of treatment, either increased or a condition was produced which closely resembled it.

According to Grinker, *Journal A. M. A.*, August 28, 1920, he has tested one hundred cases of epilepsy with luminal, and some of his cases have been free from attacks for a period of from three to four years, others from one to two years, and still others, who constitute the large majority of cases, for a number of months. According to a recent communication from him, another article is to appear soon in regard to further experiences with luminal in epilepsy.
CONCLUSIONS.

Luminal has a place as a therapeutic measure in the treatment of the epilepsies, and when taken in the doses used, does not produce the mental torpor manifestations which occur in the case of administration of bromides, and in many cases it is more beneficial; yet, it should be used with greater care and with selective cases, because of toxic effects which may be attributed to it. Neither drug appears to be habit-forming.

In cases of both luminal and the bromides, active treatment periods completed, the seizures were more nearly controlled with the former drug. From the standpoint of numbers and oftentimes in regard to severity, cases of idiopathic origin were the more responsive. Diet and elimination treatment group obtains last place on the list, but are very important, either alone or in conjunction with other recognized methods of treatment. No particular laxative or cathartic appeared superior to others during this period, though in the post-treatment observation period Groups 1 and 4 contained the lowest percentage of seizures of the first four groups. Special care to avoid auto-intoxication in Group 5 played a very important rôle in the reduction of seizures obtained there. Beneficial effects were noted in all groups during post-treatment observation period.