"inadequate drifters" or "aggressive" psychopaths were significantly helped. The psychopathic personality as such is not amenable to treatment by leucotomy, but in some cases the disturbed behaviour, based upon real distress as distinct from merely deficient control, may be helped.

Conclusion

In conclusion, I believe leucotomy to have a useful and, indeed, valuable place in the treatment of mental illness. It is, however, destructive and potentially harmful, and should be carried out (as I believe that in general it is carried out) only after careful consideration, and certainly not because "there is nothing else we can do." The major frontal cuts have little to offer which cannot be achieved by more limited incisions, and their power to do harm is very great. At the present time there appears to be a reaction against "psychosurgery," based upon the experience of the ill effects of standard leucotomy. It would be a pity if what is good in this method of treatment were to be abandoned because it has sometimes been carried out too enthusiastically in the wrong type of case. It is unfortunate that the misleading publicity given to the bad results of some standard operations sometimes leads patients and their relatives to refuse a modified leucotomy.

Summary

A personal follow-up study of 240 patients after rostral leucotomy is briefly described.

It is shown that this limited frontal operation is capable of giving relief from distressing symptoms somewhat less than, but comparable with, that given by standard leucotomy.

Unpleasant personality changes followed in less than 5% of cases; where these occurred the reason was to be found in wrong selection of cases or in operative complications, which are rare but probably unavoidable.

Some of the factors are discussed which should be borne in mind in selecting cases for operation; the most important are: (1) the established personality patterns, shown in detailed study of the patient's life history, since these are least likely to be altered by operation; (2) the type of illness, particularly whether it has developed insidiously in an inadequate or otherwise unsatisfactory personality, or whether it appears, more sharply defined, against a background of a "good" personality; (3) the extent to which symptoms depend upon distress, whether of tension, depression, or ruminative thinking; (4) the patient's life situation and the possibility of his being able to adjust to it, or for it to be adjusted to him, after his symptoms have been relieved by operation; and (5) various unpredictable chance factors, particularly social and surgical.

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The appointment of Charles C. Colby, III, medical librarian for the University of Missouri, as librarian of the Boston Medical Library, the third largest medical library in the United States, was announced recently. He succeeds the late James F. Ballard.

NYSTAGMUS AS A PHYSICAL SIGN IN ALCOHOLIC INTOXICATION

BY

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The high incidence of nystagmus found in motorists suspected of "being under the influence of drink" (Howells, 1952) gave rise to speculation concerning its significance as a physical sign. It was known that nystagmus could be produced by the intravenous injection of quick-acting barbiturates (Bender and Brown, 1948), and it has since been reported that nystagmus has been found in methylpentynol ("oblivon") intoxication (Marley, 1955).

In order that further information might be obtained a preliminary laboratory investigation was carried out. Ethyl alcohol was given by mouth to volunteers to confirm that alcohol produces nystagmus and to determine the approximate amount of alcohol needed to produce this effect. The second stage involved the measurement of reaction time before the taking of the alcohol and again after the onset of nystagmus. Finally, alcohol was given in the form of whisky or gin in order to determine whether the resulting nystagmus differed from that produced by an equivalent amount of ethyl alcohol.

Experimental Procedure

The volunteer subjects, whose ages ranged from 20 to 29, were all medical students in their clinical years and with one exception were all males. The reaction time was determined just before taking alcohol, at least two and a half hours after the last meal. The alcohol was diluted with an equal volume of lime juice and water and was consumed during a period of ten minutes.

At intervals during the hour subsequent to taking alcohol the presence of nystagmus or any other eye sign was noted, and as soon as any nystagmoid movements were observed the reaction time was redetermined. The experiments were carried out on single subjects or in groups of two. On many occasions the subject was accompanied by a friend, so that the laboratory seldom contained fewer than four people. The first five subjects sat in the open laboratory facing a signal light. A circuit was devised so that the interval of time between the stimulus and the subject's response was, by operating a morse-key switch, represented graphically on a cathode-ray oscillograph and the result recorded by photography. The next four subjects were each seated in an air-conditioned metal box of 70 cu. ft. (1 cu. m.) which was both lightproof and soundproof. The stimulus was still a visual signal from a small red neon light, but the response was made by extending the partially flexed left index finger. Three silver suction electrodes were placed over the extensor indicis muscle, and the response was recorded on one channel of a conventional encephalograph. This provided a continuous electromyogram, and when a second channel was connected with the signal-light circuit it was possible to measure the reaction time directly from the recording paper.

Subjects 10, 11, and 12 were seated in the open laboratory, and the stimulus was a click from a loud-speaker. The response was the extension of the index finger, and the time of its appearance, together with that of the stimulus, was recorded in a manner similar to that used in the previous group. The intervals between recordings were taken up in casual conversation, which appeared to flow with greater

facility as the alcohol became absorbed. In each case the reaction time was taken as the mean of at least seven determinations made at random intervals.

Results

Nystagmus appeared in 4 out of 12 subjects within 15 minutes of taking alcohol. There was variation in the dose needed to produce the physical sign; the majority required from 0.7 to 1 ml. of absolute alcohol per kg. body weight, while a few did not exhibit nystagmus until they had received 1.4 ml. per kg. The reaction time was measured at the first indication of nystagmus or nystagmoid jerks (Howells, 1952). It will be seen from the Table that in

Table of Results

Subject No.		Reaction Time in Seconds	Standard Deviation	No. of Observations	Increase in Reaction Time
1	Normal	0.198	0.017	10	
	After 1 hour	0.228	0.031	10	15%
2	Normal	0.262	0.043	9	
	After 10 mins.	0.298	0.044	9	13.7%
	" 20 "	0.3	0.021	7	14.5%
3	Normal	0.232	0.024	10	
	After 18 mins.	0.31	0.044	9	33.6%
	" 28 "	0.326	0.03	9	40.5%
	" 50 "	0.288	0.036	7	24.1%
4	Normal	0.24	0.035	10	
	After 15 mins.	0.26	0.035	7	8.3%
5	Normal	0.156	0.036	10	
	After 30 mins. approx.	0.212	0.036	10	35.9%
6	Normal	0.138	0.037	23	
	After 40 mins.	0.161	0.02	12	16.7%
7	Normal	0.125	0.023	24	
	After 20 mins.	0.16	0.024	14	28%
	" 50 "	0.167	0.029	11	33.6%
8	Normal	0.148	0.043	28	
	After 15 mins.	0.167	0.048	22	12.8%
9	Normal	0.163	0.033	20	
	After 15 mins.	0.17	0.034	18	4.3%
	" 45 "	0.22	0.039	32	34.9%
10	Normal	0.167	0.026	44	
	After 45 mins.	0.183	0.026	31	9.6%
11	Normal	0.185	0.034	32	
	After 45 mins.	0.222	0.058	29	20%
12	Normal	0.21	0.034	25	
	After 18 mins	0.22	0.036	36	4.8%
	" 45 "	0.23	0.044	25	9.5%

every case the appearance of nystagmus was accompanied by an increase in reaction time. The increase at the onset of the physical sign varied from 4.3% to 35.9%. In all those cases where further estimations were made it was evident that the increase was not maximal at the onset of nystagmus, and in one subject it subsequently rose as high as 40.5%. In none of the subjects examined was any abnormality of the pupil found. Alcohol when given in approximately the same quantities in the form of whisky or gin produced the same effects.

Discussion

This experimental evidence suggests that the nystagmus found in the alcoholic motorist was due to the taking of alcohol and can be reproduced in experimental subjects by giving ethyl alcohol, whisky, or gin. Its appearance after taking alcohol suggests that a subject of average weight has received a minimum of 50 ml. of absolute alcohol or its equivalent. The increase in reaction time which was evident during the period of nystagmus is an indication of impaired function of the central nervous system. The fact that no other eye sign was found indicates that nystagmus is the earliest eye sign produced by alcohol and is not dependent on any abnormality of the pupil size or reaction.

In a large proportion of subjects it was noted, when determining reaction time after alcohol, that the first response to the stimulus was greatly delayed. This occurred in spite of the fact that the subject was well aware that the test was about to take place. Similar delay was not found in the first test of the control series before alcohol. This point is being further investigated.

Summary

The ingestion of a known volume of alcohol in volunteer subjects has been studied. In all cases nystagmus was produced after a variable period of time. On the appearance of this physical sign the reaction time to a light or sound stimulus was prolonged.

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EFFECT OF POLYAMINOSTYRENE ON GASTRIC ACIDITY

BY

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Polyaminostyrene ("styrion") is an anionic exchange resin, having the following chemical structure:

It is a brownish material insoluble in water; a weak base which will give salts with strong acids. These salts are also insoluble.

After ingestion, neutralization of gastric acidity converts the resin into the chloride form, which on reaching the alkaline medium of the small intestine changes back again into the original substance, with the formation of water, CO₂, and NaCl. The unchanged resin is excreted in the faeces.

There is no release of gas in the stomach, and there is no loss of electrolyte from the body. Neither is there a risk of alkalosis occurring during therapy. It would appear that polyaminostyrene constitutes the almost perfect antacid, but little attention has been paid to the substance in Great Britain. For this reason a small trial was made in order to see whether the results merited a further and longer trial. Five patients, four with duodenal and one with gastric ulceration, were investigated. All had high gastric acidity, as measured by a fractional test meal.