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The Conditioned Reflex Treatment of Alcoholism

A Review by Grace C. Howard

ONE OF THE RECENT and apparently successful treatments for alcoholism, a treatment for which two of its users, Frederick Lemere, M.D., and Walter L. Vœgtlin, M.D., of the Shadel Sanitarium, Seattle, Washington, claim is 64 per cent effective of cures, is known as the conditioned reflex treatment.

The words, "conditioned reflex," are immediately associated with the Russian physiologist, Pavlov, whose experiments and lectures on the subject are well known. This experimenter caused a red light to appear every time he fed an experimental dog. Soon, the mere appearance of the red light without the presence of food caused saliva to flow freely in the dog's mouth. This was a true conditioned reflex: a normal response (salivation at the thought of food) was elicited by means of unnatural stimulus (the red light). In the new treatment for alcoholism, an unnatural or unconditioned stimulus, a nauseant drug, emetine, is used to produce a normal reflex, nausea at the sight, smell or taste of alcoholic liquor. Emetine is an alkaloid of ipecac and its action, except for its peripheral effect on the mucous membrane, is central.¹

Any one of the five senses could have been used as a pathway for the unconditioned stimulus, says Vœgtlin, but in this instance the blood stream was used.¹ A "shot" of emetine into the circulatory system was what produced the desired results: nausea at the sight, smell or taste of alcoholic liquors.

The eliciting of any unpleasant sensation could have been chosen but the sensations of nausea and vomiting were taken because there were drugs easily obtainable to produce the desired results; the psychological effect between the taking of food and drink and nausea and vomiting is stronger in causing a dislike for liquor than pain, convulsions, or faintness would be. Moreover, vomiting on ingestion of liquor would automatically rid the body of alcohol before it could be absorbed by the system and bring about narcotic action to the point where the conditioned response would be wiped out.²

The fact that a drug is used in the treatment is not emphasized to the patient but of course, most patients are clever enough to associate the hypodermic injection with the resulting nausea. "It's that shot the doctor gives you that makes you sick," one patient told this reviewer. Does this knowledge spoil the effect of the conditioning on the patient? Voegtlin thinks not and cites as proof that many physicians who have been made ill through food poisoning, know perfectly well that it was the specific dish of food that made them so, yet are conditioned against that food because of the unfortunate experience.³ This reviewer has seen patients who knew that it was the drug that made them ill yet who seemed adequately conditioned. One told of opening a magazine to a whisky advertisement of the same brand with which he was conditioned. At the sight of the bottle, he immediately became nauseated.

Comparison with Other "Cures"

The question has been raised, isn't this treatment like the old Keeley Cure? In one phase of the latter treatment, the conditioned reflex was used: before liquor was given, a dose of apomorphine (a drug which causes nausea) was administered. In another phase of this treatment gold chloride was injected. Voegtlin claims that it was only by chance that use of the conditioned reflex was made since this was long before Pavlov's scientific technique, necessary for the establishment of the conditioned reflex, was known. Only 10 per cent of the patients treated by the Keeley Cure are claimed to have remained sober for a period of two years subsequent to treatment while Voegtlin claims about 64 per cent of cures in more than 600 cases, four years after treatment.⁴ He states that any large series of cases which have been psychologically prepared to stop drinking, will show 10 per cent of cures, regardless of the type of treatment used.⁵

Voegtlin further explains why the old idea of putting "something in his coffee" will not cause a man to stop drinking. Nausea following drinking does not form a conditioned reflex as in the case of food poisoning because the subject is narcotized by the alcohol to the extent that establishment of a conditioned reflex is impossible. In other words, there is too much time between the drinking of the liquor and the onset of nausea and vomiting.⁶ It has been experimentally shown that the conditioned reflex rapidly becomes extinct in narcotized animals.⁷

Method of Procedure

The actual technique of procedure is of interest. It is most important that no outside influence shall interfere during the process. Voegtlin states that when the conditioning treatment is unsuccessful, it is usually the result of "improper or incomplete application to technique." He lays down as a fundamental principle that the conditioned stimulus, the drink, must be shown before the unconditioned stimulus, the drug, appears.⁸ Every stimulus that would reach the patient is carefully guarded against and no stimulus is allowed which is not related either to the drinking of liquor or to nausea and vomiting. These stimuli are permitted to reach the patient through as many of the senses as possible. He hears the opening of bottles, the clinking of glasses, the gurgling of the liquids as they leave their containers. He is urged to smell the bottles and the glasses after drinking and is told to look intently upon them.⁹

For better concentration, a sound-proof room is used. This is closed throughout the conditioning period. No conversation takes place.¹⁰ Attention is focused on the liquor thus: the only light in the whole room is a single shaded bulb which shines directly upon a table with a mirrored surface upon which the liquor is placed. Mirrors are also placed so that the table and its contents are reflected as many times as possible.

The room is without windows; the walls, a flat black, are smooth and without decoration. The furniture and floor are also black. Every possible odor, except that of liquor, is carefully eliminated. The room is equipped with a comfortable chair for the patient and with toilet facilities.

The timing between the drug shot and the first administration of liquor has to be carefully regulated. This, says Voegtlin, is the most difficult single technical detail to master.¹¹ The amount of drug used varies with the personality of the patient. The amount necessary to use can be judged after the first dose. Since nausea results from 2 to 8 minutes after emetine is given, the operator has to work fairly quickly in giving the drink. The error of only a few seconds in giving the first drink will both annul the effect of the treatment and also cause the patient to resist further efforts to "establish a satisfactory conditioned reflex."¹²

As soon as the nausea has begun, the patient is given all types of liquor. As soon as a glass is emptied, he is told to smell it deeply. Plentiful amounts of warm water are given

after the alcoholic drink to make the process safer and easier for the patient. As soon as emesis is complete after the first drink, other kinds of liquor in turn are forced upon the patient until the nauseant effect of the emetine has worn off. The whole list of drinks which the patient uses must be given for the conditioning is specific for each drink.¹³ Finally, the stomach is washed out and the patient is covered and left until the effect of the drug has ceased. Five to seven of these treatments are given and the time consumed is usually five days. The routine is really an individual matter. Some require only two treatments, others need ten. Too many treatments cause "extinction by adaptation" and the reflex is destroyed.¹⁴

Voegtlin warns that "a certain hazard" exists in the administration of the treatments; 30 per cent of the patients develop faintness and the heart rate often slows markedly—even, sometimes, to the point of momentary standstill with the onset of nausea.¹⁵ When poor technique has been used, it is possible that "an alarming though not dangerous collapse" may result.¹⁶ Daily chemical and microscopic urinalysis are given; the blood pressure is taken three to five times daily and the blood is given chemical analysis in cases where this is necessary.¹⁷ Patients with the following symptoms are not given this treatment: cardio-vascular renal-syndrome; liver cirrhosis; hernia (unless guarded); peptic ulcer; active psychosis; recent loss of blood.¹⁸

Prognosis

The patient most likely to obtain a successful result from the treatment is a male, over 28 years of age who has not been drinking wine; a relapse is least likely among those who have used distilled liquors. While 64.3 per cent cures are expected, it is found that only 57 per cent of women are cured. Prognosis is poorer for those who have to have treatment because of relapse.¹⁹ Failures occur not because the reflex was not established but because of the natural breaking down and weakening of the conditioned reflex. This can be overcome by re-conditioning which is strongly advised. Relapse is usually the result of the feeling that, after a period of abstinence, the patient can now drink in a controlled way. Further, he becomes curious to see if liquor really will make him sick. Gratification of either of these desires usually ends in a relapse. The best chances for success follow the first conditioning. Voegtlin will not receive patients who have relapsed more than once.²⁰ He believes with many others, that no matter how long it has been

BALANCING THE EFFECTS

MANY PERSONS who have acquired through social custom or environment the use of alcoholic beverages find them attractive. The drawback to their use lies in the effects of alcohol on the nervous system and the mentality, even when used in dilution. Unlike normal foods and stimulants, as soon as alcohol becomes a producer of ease and pleasure it tends to result in a preponderance of destructive effects. Most of the effects for which it is drunk in quantity are preponderantly detractive.

—ADOLF MEYER, *The Scientist Experiments with Alcohol*, Introduction.

since the person drank, the real alcoholic can never become a moderate drinker.²¹ To stay sober, he must avoid the first glass.

It is interesting to note that the patient sometimes becomes conditioned against unexpected things in the course of treatment. Soft drinks, served between the alcoholic liquors, are often conditioned against.²² A simultaneous aversion to snuff may be developed and Voegtlin states that he has never known a person who has been thus conditioned to revert to the brown powder again.²³ One individual known to this reviewer who took the treatment in the East, became conditioned against the doctor. "Every time I see him, it makes me sick," he moaned.

Summary

In summation, Voegtlin states that a new physiological approach to the treatment of alcoholism has been tried—the conditioned reflex. The most satisfactory results come with mature men. Mortality has been less than 0.15 per cent for which reason, this is considered a safe treatment. If, through the trained social worker, the treatment can be re-enforced by a refitting of the patient to his environment, the cures expected are about 64 per cent. The results can be improved by psychotherapy and routine re-enforcement. Usually aversion is "highly specific" and each kind of drink must be conditioned against. Instances have been found when the patient could not drink the liquors conditioned against, but had no difficulty in taking other drinks.²⁴

In this treatment, there is no matter of "will" concerned: it

is physiological reaction dependent on the formation of a deep, subconscious reflex. It is a modern method, and to many, will seem revolutionary when placed against the background of the older ideas of temperance reform. The answer to the age-old question: "does the end justify the means used to obtain it?" will have to be answered individually.

1. *Quarterly Journal of Studies on Alcohol*, Dec., 1940, p. 502.
2. *Ibid.*, p. 506.
3. *Ibid.*, p. 503.
4. *American Journal of Medical Science*, vol. 199, p. 802.
5. *Ibid.*
6. *Ibid.*, p. 803.
7. *Ibid.*, p. 505, quoting Elaine A. Wentink, *Journal Experimental Psychology*, vol. 22, p. 150, 1938.
8. *Quarterly Journal of Studies on Alcohol*, *op. cit.*, p. 509.
9. *American Journal of Medical Science*, *op. cit.*, p. 802.
10. *Quarterly Journal of Studies on Alcohol*, *op. cit.*, p. 509.
11. *Ibid.*
12. *American Journal of Medical Science*, *op. cit.*, p. 804.
13. *Ibid.*, p. 803.
14. *Quarterly Journal of Studies on Alcohol*, *op. cit.*
15. *American Journal of Medical Science*, *op. cit.*
16. *Ibid.*
17. "
18. "
19. *Quarterly Journal of Studies on Alcohol*, *op. cit.*
20. *Ibid.*
21. " p. 507.
22. "
23. *American Journal of Medical Science*, *op. cit.*

Alcohol, Heredity and Germ Damage

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2. *Number of miscarriages.* Studies have shown that in alcoholic families the mothers have more miscarriages than in temperate families. This has sometimes been erroneously interpreted as an indication of damage to the germ cell. The true explanation is to be found in the simple fact that, in general, the number of miscarriages increases as the number of conceptions increases. There are more conceptions and more children in the alcoholic families and therefore more miscarriages.

3. *Infant mortality.* It is clear that the mortality of the children in alcoholic families is much higher than in temperate families, in fact, nearly twice as high. This occurrence has been taken, but erroneously, as the best possible evidence of germ damage by alcohol; it has been presumed that because of germ damage the children were weakened and because of their weakness had less chance to survive. In reality they had less chance to survive, not because of defects in the germ, but because of the environment into which they were born. Because

of the irresponsible and irregular habits of their parents they were neglected.

The fact that the high mortality among infants of chronic alcoholics is not due to the development of hereditary defects and inherent weakness is emphasized here for an important reason. If these unnecessary deaths are to be prevented, the facts must first be known. When the belief is held that the high mortality is due to germ damage, the prevention seems hopeless. Hereditary weaknesses cannot be remedied after the child is born. When, however, it is realized that the high mortality is not due to fundamental weakness of the child, but instead to home and social conditions, their remedy is no longer impossible.

4. *Occurrence of disease.* What has been said here regarding alcohol and infant mortality applies exactly to alcohol and the occurrence of disease in children. Disease is not due to weakness acquired by the child from the alcohol used by the parents; it is due to lack of prenatal care and neglect of the child after birth because of the excessive drinking habits of the parents.

5. *Occurrence of feeble-mindedness, epilepsy and mental disorders.* The occurrence of mental disorders, feeble-mindedness, idiocy and epilepsy is much more frequent among the offspring of abnormal drinkers than among those of moderate drinkers and abstainers. In many instances, but not all, there is a definite relation between heredity and the disorders dealt with here. But as with infant mortality, idiocy and epilepsy among the offspring of alcoholic parents cannot be taken as showing that these conditions resulted from the alcohol or from the germ damage due to the alcohol. Unlike infant mortality, home and social environment play little part in causing these disturbances. The explanation is to be found in the fact that alcohol does not make bad stock but that many alcoholics come from bad stock. The offspring inherit the defects of the parents. The defects predispose to alcoholism.

The Heredity of Drinkers

The first question we deal with here is: Is the craving for alcohol inherited? If we wished to take advantage of technicalities, our answer correctly would be "no, it is not inherited." We could make this answer because abnormal drinking and the craving for alcohol are acquired traits and acquired traits are not inherited. If, however, we phrased our question an-

other way it would perhaps express more nearly what the reader has in mind on the subject and the answer would be different. To the question, are the children of alcoholics more apt to become alcoholics themselves than are the children of temperate parents, the answer is definitely "yes."

There are three reasons why the children of alcoholics tend to become alcoholics and none of these come from any alteration of heredity caused by alcohol itself. The reasons are:

1. The poor home environment of the alcoholic family, the neglect of the children and the lack of parental control are fertile grounds for the development of the habits of excess.

2. The children find in their parents an example of excessive drinking and they tend to follow this example.

3. Many excessive drinkers come from families in which mental disorders and abnormalities of personality are inherited traits. Individuals with such inherited traits are often much less able to resist intemperance to alcohol than are normal individuals and so become excessive and abnormal drinkers.

The importance of this last item lies in the fact that while environment—home life and parental example—can be controlled, heredity, once the child is born, cannot be altered. If a weakness which predisposes to poor adjustments, such as to alcohol addiction, is inherited, then the children of alcoholics will tend to become alcoholics. It is highly important to find out what proportion of alcoholics are predisposed by inheritance.

Many investigators have shown that the great majority of alcoholics have mental disturbances and abnormalities of personality. These disturbances, although not due to alcohol, predispose to alcoholism. The fact that they exist does not prove that they are inherited or that they will be passed on to children, or justify the statement, often made, with its implications of hopelessness, that these traits must pass to children—that the children of alcoholics must be alcoholics.

When one examines critically the maze of statistics that have been gathered it becomes clear that the results obtained depend upon what sort of drinkers are studied. When the investigation is limited to true alcohol addicts, and to criminals who are in institutions, more than 75 per cent have ancestors with definite mental disturbances and abnormalities of personality. But when the investigation is broadened to include what may be called "general run" of alcoholics, the figure drops to 40 per cent. Forty per cent is a high figure, some 8 or 10 times as high as for the public at large.

Conclusions

1. The use of alcohol does not injure the human germ and cause abnormalities in heredity.

2. Excessive users of alcohol frequently come from families of poor hereditary stock.

3. The defects they inherit are not caused by alcohol but they may predispose to alcoholism.

4. The greater incidence of disease and mortality among children whose parents are abnormal drinkers, as compared to those whose parents are temperate, is not due to germ damage. It is due to the low standards of living and to neglect in the homes of excessive drinkers.

HEALTH AND COMMUNITY WELFARE

RECENT DEVELOPMENTS

GREAT HEALTH PROBLEM

WITH TUBERCULOSIS, cancer, syphilis, mental disease and infantile paralysis receiving competent and intelligent medical attention, we now have alcoholism as the greatest public health problem in the present time which is not being systematically attacked.—DR. WINFRED OVERHOLSER, Superintendent, St. Elizabeth's Hospital, Washington, D. C.

DOESN'T WANT TO GET WELL

Addiction to alcohol is an . . . attempt at self-cure of a disease unrecognized by the individual. But in this case the cure becomes worse than the disease. . . . Cancer is serious but not as serious or as widespread as alcoholism. Cancer doesn't threaten this nation as alcohol does, for, unlike the patient with cancer, the alcohol addict doesn't want to get well.—DR. KARL A. MENNINGER, Chief of Staff, Menninger Clinic, Topeka, Kans.