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IDENTIFYING AND TREATING POTENTIAL ALCOHOLICS

ROGER J. WILLIAMS

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Many specific measures have been applied with greater or lesser success to prevent crime: better lighting, abolishment of slums, youth programs of various sorts. A measure which holds hope for the future is that of preventing excessive alcoholic consumption; there is no question that this is a contributing factor in a great deal of crime aside from the obvious cases where liquor or its equivalent is stolen or manufactured or sold illegally.

The author is of the opinion that the scientific means for preventing excessive alcohol consumption, if not already at hand, is around the corner, and that reasonably diligent research on the relationship between alcoholic craving and nutrition will yield the scientific answer. The practical answer will come in proportion as people are educated to see and understand that there is a way out.

Alcoholism which involves compulsive excessive drinking is clearly not a disease which afflicts "man," a hypothetical being. It afflicts only certain individuals who are and always remain alcoholism-prone for life. These "certain individuals" must in some way be different from their fellows at the other end of the scale who are alcoholism-resistant for life.

It is only within the past ten years that the problem of alcoholism has been approached with the common-sense idea of finding out what these lifelong differences are; whether they are physiological, psychological, biochemical or what not. The progress during these ten years has been phenomenal, especially when one takes into account the fact that the investigations directed toward answering the crucial question, "What is different about alcoholics?" have been highly restricted and localized. This question is very different from the one which has received far more

attention, namely "Why does man become alcoholic?"

In order to determine what is different about alcoholics, it is necessary to think and investigate in terms of human differences in general—those known to exist and those unknown but discoverable. This has been pretty much a "blind spot" so far as scientific investigations are concerned. The author has attempted to bring together in his book "Biochemical Individuality"¹ a great deal of the more definitive but neglected information on this subject.

It is perfectly clear now that human differences existing in the "normal" population are often very great. These differences may be placed in four main categories: anatomical (macroscopic and microscopic), physiological, biochemical and psychological. It seems highly probable that alcoholism-prone individuals differ from alcoholism-resistant individuals in *all* of these ways. Which ways are "most important" depends on one's point of emphasis.

It is important, however, in order to face the problem squarely to draw a line, as far as is possible, between those differences which are predominantly environmentally induced, and those which have a genetic background. If one assumes that the genetic factors are negligible, he asks the question "Why does 'man' become alcoholic?" If he is willing to admit that genetic factors may enter, then only can he think in broad terms, "What differences (regardless of origin) are basic to alcoholism-proneness?"

There is and has been a resistance to the idea that genetic factors may be involved in alcoholism-proneness, because of the supposition that "if

¹ WILLIAMS, R. J., *BIOCHEMICAL INDIVIDUALITY*, 1956, John Wiley & Sons, New York.

heredity is involved we can do nothing about it." This supposition is quite erroneous. For genetic reasons human beings have little hair on their bodies. Does this prevent them from wearing clothes? Difficulties in eyesight often have a genetic basis. Does this prevent us from wearing spectacles? Diabetes is a disease which without question has genetic roots. Does this prevent diabetics from taking insulin?

The extreme difficulty of accepting the idea that childhood experiences or social stresses are basically responsible for alcoholism-proneness in certain individuals is pinpointed by the well established fact that certain individuals are alcoholism-prone for life. A multitude of tragedies have resulted from failure to face this as a hard fact. Alcoholics, on the supposition that they have dispelled whatever psychological difficulties they may have harbored, have imagined that their alcoholism vulnerability has vanished also. All they have to do, however, is to give themselves another trial with alcohol. Inevitably they find out—the hard way—that their fundamental difficulty has not left them, and they are deeper than ever in the morass. They are still and will always be alcoholism-prone. This strongly suggests that genetic factors are involved. Of course it doesn't prove that genetic factors are involved; there is still room for the idea, often tenaciously held, that irreparable psychological damage has been incurred in childhood—an idea which to the writer seems biologically unlikely.

That alcoholism-proneness has its basis in inheritance does not mean that alcoholism cannot be prevented. Extensive research emanating from our laboratories, both with experimental animals^{2, 3, 4} and with human beings^{5, 6}, has pointed to crucial differences which make an individual alcoholism-prone. These differences relate to the appetite-regulating cells and tissues in our brains

² WILLIAMS, R. J., BERRY, L. J., AND BEERSTECHER, E., JR., *Individual Metabolic Patterns, Alcoholism, Genetotrophic Diseases*, PROC. NATL. ACAD. SCI. U. S., 35, 265 (1949).

³ WILLIAMS, R. J., BERRY, L. J., AND BEERSTECHER, E. JR., *Genetotrophic Diseases: Alcoholism*, TEXAS REP. BIOL. MED., 8, 238 (1950).

⁴ BEERSTECHER, E., JR., REED, J. G., BROWN, W. D., AND BERRY, L. J., *The Effects of Single Vitamin Deficiencies on the Consumption of Alcohol by White Rats*, UNIV. TEXAS PUB. NO. 5109, 115 (1951).

⁵ WILLIAMS, R. J., *NUTRITION AND ALCOHOLISM*, 1951, University of Oklahoma Press, Norman.

⁶ TRULSON, M. F., FLEMING, R., AND STARE, F. J., *Vitamin Medication in Alcoholism*, J. AM. MED. ASSOC., 155, 114 (1954).

which in some individuals, due to inadequate nutrition, are highly susceptible to alcohol poisoning. Complete nourishment always makes cells and tissues more resistant to poisoning, and this is the remedial route which is clearly indicated.

Because people differ from one another in their body chemistry (bloodhounds have known this for many centuries) their nutritional needs are quantitatively different.⁷ Some need in their food much larger amounts of certain items than do others. As a result, the cells and tissues which operate to control appetites are much more prone to become deranged in some individuals than in others. These are the alcoholism-prone individuals. They remain that way for life, because their genetic constitutions cannot be changed. But their appetite-regulating cells need never be deranged or deficient. If all the specialized cells and tissues in their bodies including those involved in appetite regulation are continuously well nourished, the appetite aberration known as alcohol craving need never appear.

Nutrition is only as strong as its weakest link and it is not easy to know in the case of a specific alcoholism-prone individual what his unusual needs may be. It is a fact however, and I can attest to this on the basis of personal firsthand experience, that we have been able repeatedly in individual cases to "hit the spot" by nutritional supplements so that the alcoholic craving has, as if by miracle, been completely abolished. The fact that this has happened many times, coupled with much background knowledge of why the supplements we have used should not be expected to function with complete success in all cases, leads us to think that for every alcoholic the proper nutritional supplements will abolish the craving. It may be that there are severe alcoholics whose nervous systems have received irreversible damage, or are defective beyond repair, but we are inclined to think these are few, if they exist at all, in view of the fact that some of the individuals who have received the greatest benefit from nutritional supplements have been severe cases.

An erroneous conclusion is sometimes drawn to the effect that our work on alcoholism denies or overlooks the psychological factors which enter into the disease. If one were to ask me on the basis of present evidence whether I regard alcoholism

⁷ WILLIAMS, R. J., *Human Nutrition and Individual Variability*, BORDEN'S REV. NUTRITION RESEARCH, 17, 11 (1956).

as a "mental disease," I would have to give an affirmative answer. But I would say this with the knowledge and belief that schizophrenia is not merely a "mental disease;" it is a physiological and biochemical disease, too. Alcoholism is likewise a physiological and biochemical disease with psychological components intertwined. We are relatively ignorant about how psychological factors influence physiology but we know that they do. It is not always possible to draw a hard and fast line and say this aspect of one's life is biochemical while that is psychological. We human beings are not built in compartments.

Another false conclusion has been reached with respect to our alcoholism investigations, namely that we advocate the use of "vitamin pills" (most any variety) and that these constitute a cure-all. Actually the right kind of vitamin supplement is capable of working wonders in some cases if taken faithfully, but there is a world of difference between vitamin preparations. Many of the specific drug-store preparations are conspicuously compounded to sell rather than to meet physiological needs.⁸ Most of those alcoholics who are induced to "try vitamins" are sufficiently irregular and sporadic in their use, so that even if the preparation used were ideal, the rehabilitation results would still be highly unsatisfactory. Nutritional prevention of the disease should be far less exacting than repair after serious damage has already been done.

It is important to recognize that vitamins are but links in the nutrition chain; the cells and tissues involved either directly or indirectly in appetite regulation, need minerals, amino acids from proteins and other nutritional elements. It now seems probable that adequate protein nutrition is highly important for the prevention and treatment of alcoholism; certainly one protein-derived amino acid, glutamine, has been found to work wonders in some cases.⁹

The fact that well chosen vitamin supplements and the amino acid glutamine have abolished craving in some alcoholics, is one substantial basis for our hope that all alcoholics can be greatly benefited by careful attention to nutrition. But in every case the nutrition must supply the particular

individual with plenty of everything that his appetite-regulating center, as well as the rest of his body, needs.

Another basic reason for our belief that alcoholism has a physiological foundation and our hope that fully adequate nutrition will prevent the derangement of the appetite-regulating centers in the brain or elsewhere, lies in the fact that other appetites—those for water, food, sugar, fat, salt, calcium et cetera—have physiological and biochemical bases and, as might be anticipated, are influenced by nutritional factors. From the purely scientific standpoint alcoholism is one of several appetite aberrations. The others are often based upon anatomical or physiological weaknesses, and it seems reasonable to surmise that in this respect alcoholism is similar and does not belong in a separate category all its own.

One of our reasons for optimism with respect to the alcoholism problem is based upon the progress we have made toward detecting alcoholism-prone individuals before they become alcoholics. In a recent contribution¹⁰ we have cited eleven items involving blood morphology and blood and urine chemistry which were found to be significantly different for alcoholics than for controls. In addition to these eleven, several other promising items were mentioned. While we cannot as yet rule out the possibility that some of these differences may have arisen in part because of heavy alcohol consumption, rather than being indications of alcoholism-proneness, there is evidence that many of the differences have a strong genetic basis and resided in the individuals before they began consuming alcohol in excess.

Three features of blood morphology, the total leucocytes, the lymphocytes and the eosinophils are of particular interest in this connection. While usually within the so-called "normal range," the values for the alcoholics were significantly on the high side for each of these three items. Earlier studies¹¹ on both men and rabbits had indicated that each individual exhibits over a period of time a consistent hematological pattern which must be genetically determined.

¹⁰ WILLIAMS, R. J., PELTON, R. B., HAKKINEN, H. M., AND ROGERS, L. L., *Identification of Blood Characteristics Common to Alcoholic Males*, Presented before the National Academy of Sciences, New York, Nov. 1957; PROC. NATL. ACAD. SCI. U. S., 44, 216 (1958).

¹¹ ROSAHN, P. D., AND CASEY, A. E., *Quantitative Variations in the Hemacytologic Constitution of Healthy Men and Rabbits*, AM. J. MED. SCI., 192, 456 (1936).

⁸ WILLIAMS, R. J., AND ROGERS, L. L., *The Formulation of a Genetotropic Supplement for the Experimental Treatment of Diseases of Obscure Etiology*, TEXAS REP. BIOL. MED., 11, 573 (1953).

⁹ ROGERS, L. L., AND PELTON, R. B., *Glutamine in the Treatment of Alcoholism: A Preliminary Report*, QUART. J. STUDIES ALC., 18, Dec. 1957.

While the identification of alcoholism-prone individuals before they become alcoholics cannot be regarded as an accomplished fact, it seems highly probable that dependable tests can be developed within a comparatively short time. The elapsed time will depend, of course, upon how many laboratories attack the problem in a constructive manner and how much manpower is put onto the problem.

One of the greatest obstacles to conquering the problem of alcoholism is the existence of large numbers of highly vocal advocates of the "educational approach" to the problem. These are most often laymen who have been convinced that alcoholism is a symptom of a personality disorder which has been environmentally induced. While this idea is certainly worthy of careful consideration, its acceptance as a fact closes the door to a broad investigation which may uncover entirely different concepts. The public needs to be educated to recognize alcoholism as a disease. This is highly important. But to educate the public to believe implicitly that alcoholism has a psychogenic origin can be a severe stumbling block in the way of advance. The biochemical and physiological approach to alcoholism is continually being made more difficult by all those who are interested in the problem and think they already know the psychological answers.

The attitude of the medical profession toward alcoholism is certainly a reflection of the true state of affairs. Most physicians have preferred not to have alcoholics among their patients for the simple reason that, aside from treating their immediate symptoms, they have been unable to give real help. Alcoholism has most often been considered in the domain of psychiatrists but few of these feel competent to handle cases of alco-

holism. The most consistent advice given alcoholics by the medical profession is "Join Alcoholics Anonymous." This is excellent advice, because this group has done more for alcoholics than any other. The phenomenon of physicians referring sick people to a lay group is, however, potent evidence that up to the present medical science does not recognize a proper treatment for the disease.

This being the case the author feels justified in making a strong plea for more and more research into the physiological and biochemical aspects of alcoholism particularly directed to the question: What is different about alcoholics?

I am convinced that the outlook is very bright and that alcoholism-prone individuals can soon be detected before they become alcoholics and that soon the tools will be available which will make it possible to prevent the development of the disease effectively. The nutritional approach must be made intelligently, however, not by faddists who think they have found the elixir of life in water cress, black strap molasses, yogurt or "royal jelly." It likewise cannot be made by those who still think of "vitamin B" as though it were a single substance or even a "complex," and who disregard the crucial fact that what matters practically is not which food elements we get (we cannot avoid traces of all), but whether we get enough of each. A thorough understanding of the biochemistry of nutrition, including the genetic implications, is prerequisite to the scientific solution of the problem of alcoholism as a disease. When our science has developed to the point where alcoholism, in its varying degrees, can be prevented, we will have taken one more step toward the prevention of crime.