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A PLEA FOR THE MEDICINAL USE OF PURE ALCOHOL AND ALCOHOLIC MIXTURES OF KNOWN COMPOSITION IN PREFERENCE TO ORDINARY FERMENTED LIQUIDS.

By

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I PRESENT to the College this evening, with some misgivings I confess, a topic which can scarcely yet be considered a "live issue" in clinical medicine, but which is destined, I am certain, to become one. At the present time the profession does not take kindly to suggestions having in view material modifications of its policy in reference to alcoholic liquors. The majority of physicians regard those who preach or practise total abstinence, or throw doubt on the indispensability of alcohol as a therapeutic agent, as entitled to little respect or tolerance. In presenting the view that we should abandon in clinical medicine the use of the natural wines and liquors, and resort to mixtures confessedly fictitious, we must expect to encounter all the force of the conservative spirit. Many centuries of constant use have developed in the race a feeling that fermented drinks, particularly those that, like wines and malt liquors, have suffered no modification by distillation or admixture, are bounties of nature wisely given for our use. The traditions of the past associate the first preparation of liquor with

the gods, and in all ages poetry and prose have combined to increase the reverence for these natural products. Yet all this feeling is nothing but a superstition. Fermentation is now known to be a process occurring under the influence of micro-organisms, and it allies itself with ordinary putrefaction. The reverence which we have for "nature's laboratory" is born of ignorance, and there is no progress in chemistry more gratifying in its results, than that which deals with dispelling the illusions which have surrounded its application to medicine.

Whatever ulterior relations the plan advocated here may have to the questions of total abstinence are not presented for discussion; I merely offer it as a contribution to the methods of exactness and certainty in clinical work.

In the medicinal and dietetic use of fermented liquors, it is the effect of the ethyl alcohol which is sought to be obtained. It is true that those who prescribe liquors a great deal are in the habit of saying that the accessory ingredients, compound ethers, astringents, or bitter principles, etc., are also efficacious, but if we closely observe the customs of such prescribers, it will be found not only that the effect expected from the alcohol outweighs that to be obtained from any other ingredient, but also that in the majority of cases the accessory ingredients are either not known or recognized.

This fact is then taken as a starting point, that an agent universally recognized as one of powerful physiological activity should be used only in the most definite condition.

The forms of fermented liquors are numerous, and each form is subject to minor variations, depending on

on locality and season. The demand exceeds the supply, and hence the strong temptation to dilute and substitute. Within the past few months further notice has been given of the communications by American consuls abroad to the effect that the wines and brandies exported from France and Portugal are fictitious articles, in the majority of cases, and it needs but a little inquiry to show that a very large trade in liquors, more or less spurious, is carried on over the entire world.

Chemical analysis still has much to accomplish in the study of fermented liquors, but enough is known to enable us to imitate their essential features. The tabular statement of composition gives us a long list of mineral ingredients, but we are reasonably certain that, besides the ethyl alcohol, the only ingredients that need attention are the traces of fusel oil, compound ethers, astringent and bitter principles, and the effect even of their accessories is often more on the mind than on the body.

I suggest first, then, that in all cases in which the general physiological effect of ethyl alcohol is desired, it should be given by prescription, in the form of a rectified spirit of standard strength. My friend Dr. A. W. Miller, who is familiar with this topic, both from the point of view of the pharmacist and physician, has suggested that such a standard, pure spirit be made officinal under the title *spiritus maydis rectificatus*. Such a suggestion is in the interest of clinical accuracy and safety to the patient. If the medical profession have any concern in the protection of the health and morals of the community—and it would certainly appear that it has great concern—no better opportunity is offered for good work than in reforming the widespread errors in refer-

ence to the use of alcoholic liquors. Where is the physician who would say to a patient, take a little laudanum or chloral every day, and leave to the patient or the druggist the duty of determining the dose, or the duration of the treatment? Yet every day physicians give similar recommendations in regard to liquors. The use of rectified spirits in prescriptions is to be recommended on the same ground that we give potassium bromide and iodide in accurate dosage, instead of the sea-water which contains them, or morphia and quinine instead of opium and Peruvian bark. Incidental to the therapeutic accuracy and moral safety which are involved in such practice, is the not unimportant question of cheapness. Many liquors command prices far above the actual commercial value of the ingredients they contain. A pure French brandy, for instance, costs $12 per gallon. Its place can be taken by a spirit of much less cost.

Several objections may be made to the plan of using the plain spirit. I cannot stop to consider the one which arises from a belief in the superiority of a natural product, from a view that that which arises from a natural process will be necessarily superior to anything artificial; this, as I have said before, is a superstition; but there are some suggestions which are really important. It may be that the accessory ingredients have some therapeutic value, and it has been said to me that while pure alcohol may easily be used during acute disease and in hospital practice, that in long-continued treatment, and as a dietetic, patients cannot be made to take it. In these cases the method to be pursued is plain. Let the alcohol be mixed with suitable accessory ingredients. If a combination of bitter tonic, sedative,

and stimulant is wanted, it can be prescribed, and so on. There need be no difficulty in the matter, because modern art in the preparation of fictitious liquors has reached such perfection that excellent imitations of the natural liquors are made, and these have the advantage of definite and known composition and greater cheapness.

It is not uninteresting to note here the general nature of this work. I have the samples to illustrate it. In the preparation of fictitious liquors three methods may be employed. 1st. The genuine liquor may be diluted with a suitable strength of pure spirit. This will give us a liquor differing but little from the original. 2d. The liquor may be imitated by adding to pure spirit coloring and flavoring ingredients. In many cases this will give a liquor substantially identical with the original. 3d. The liquor may be made up weak, and then taste and appearance of alcoholic strength be given by means of pepper and bead oil. The latter method is reprehensible, but the two former methods are, I hold, not injurious, and should be recognized.

In order to make the present state of the art more clear to the members, I submit herewith samples of artificial liquors, cordials, and flavors, kindly furnished me by Dr. A. W. Miller, of this city.

[Samples of rectified spirit, whiskey, brandy, Holland gin, chartreuse, and curacoa, were exhibited, also a number of concentrated flavors and coloring matters.]

[After the reading of the preceding paper:—]

Dr. A. W. MILLER said: I have listened with much pleasure to the reading of this paper, for the subject is one in which I have taken considerable interest for a number of years, and I have myself written several papers on it. I doubt whether Dr. Leffmann is entirely correct in speaking of these liquors as being made by art. It is simply following a well-known law of commerce and bringing those products from countries where they are abundant to those countries where they are scarce. In making whiskey we use alcohol produced by fermentation of corn, which is the cheapest article from which it can be made in this country. This is passed through percolators containing charcoal, sometimes animal and sometimes vegetable, which absorbs all the fusel oil and coloring matters. When this process is carefully performed, we have an absolutely pure spirit, which is made of such strength as to contain fifty per cent. of alcohol by volume. To flavor this we import from Germany, where rye whiskey is one of the cheapest forms, the oil of rye, which is there a waste product in the rectification of rye whiskey. When this is diluted to a proper strength, it can be used as a flavoring material.

Brandy is made in nearly the same way. The flavoring material is obtained by distilling the refuse of the grapes, from which the wine is made, with sulphuric acid. There is only one pound of this obtained from a ton of the so-called mark. When this is properly reduced, it may be used as a flavoring ingredient. These are not the only ingredients used in flavoring, but they are all harmless in the small proportions used. Another of these flavors is acetic ether. This is also present in the natural product. The peculiar bouquet of high-priced wines is probably due to the presence of acetates, and to the products of oxidation of fusel oil, producing valerianic acid and subsequently valerianates of ethyl and amyl. These are present in an infinitely small proportion. Artificial rye whiskey contains only one part of amylic alcohol in ten thousand parts. Brandy only one in fifty thousand. In addition to acetic ether, there is formic ether in brandy, and also butyric ether. All these things are used by confectioners in flavoring candies, and, as far as I know, no one has suffered from their use, although they are used in larger quantities. There is another point, namely, that liquor-dealers insist upon having a wholesome article, while confectioners are not so particular.

The cordials which have been shown are made from the rectified spirit with the addition of aromatics and syrups.

The curacoa is almost an exact representative of the simple elixir of the pharmacopœia. This is a very useful manner of administering a mild form of alcoholic beverage, and is to be preferred on account of having the sanction of the pharmacopœia, and on account of having a definite strength. This is another point in favor of the use of artificial liquors. The rectified spirit always contains fifty per cent. of alcohol. The natural liquors vary greatly, sometimes falling to forty per cent., and sometimes, as in rum, reaching seventy-five or eighty per cent.

I might say here that the unpleasant taste of ordinary diluted alcohol is probably due to the amylic alcohol, which is more soluble in strong than in dilute alcohol. Not being thoroughly combined, it causes a disagreeable taste and odor.

The economical value of these substitutes has been referred to. The rectified spirit can be bought for $1.25 per gallon, and its therapeutic value is equal to that of brandy at $10 per gallon.

I have proposed the name *spiritus maydis rectificatus*, because it designates the particular kind of grain from which this alcohol is derived, and prevents it from being confounded with the spiritus frumenti, which is now officinal.

Dr. JOHN GRAHAM: At the Franklin Reformatory Home, some three hundred cases of alcoholism are treated annually. For the last two years none of the ordinary alcoholic drinks have been used, but we have employed rectified spirits variously medicated. In the mild cases, alcohol is not used, but in the severe cases it is. The results have been equally as good as when the ordinary liquors have been used. In devising these substitutes for ordinary liquors, we must be careful that we do not injure instead of aid the temperance cause by the introduction of new drinks. In regard to dose, we consider one teaspoonful of rectified spirits to equal two teaspoonfuls of brandy.

Dr. J. L. LUDLOW: I would like to ask to what the term oil of cognac is applied? Also whether Dr. Miller has noticed any difference between the so-called California brandy and so-called French brandy? I have tried the California brandy and it struck me as though red pepper had been added to it.

Dr. MILLER: There are different varieties of oil of cognac. The best is that which is obtained by acting with sulphuric acid on the residue of the grapes after pressing out the juice. As I have said, there is only about one pound obtained from a ton of residue. It is a complicated compound of the higher ethers. Some artificial oils of cognac are made by the action of nitric acid on oil of rue, others by the saponification of castor oil or cocoanut oil and the subsequent decomposition of the soap thus formed by sulphuric acid.

As far as my experience goes, California wines and brandies are perfectly pure. Their low price offers no incentive to adulteration. It is well known that brandies from different localities have different flavors. The California brandy also probably never reaches the age of the French brandy.

Dr. WILLIAM HUNT: I have frequently made the observation that in low forms of disease where alcohol is called for, the odor cannot be detected in the breath as long as the patient is not getting too much.