began the habit of imbibing at dinner, and finally continued his potations into the night, his wife and friends frequently joining him. Three of his eight children are epileptics, and yet no one but his intimates are supposed to know of his conviviality, as he only drank in the night. Once he said to me: "Formerly I drank for pleasure; now I drink because of remorse."

Such illustrations might be repeated indefinitely, but I think I have said sufficient to convince you that there is a definite relationship between alcoholism and epilepsy.

THE VALUE OF TEMPERANCE INSTRUCTION.*

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The Woman's Christian Temperance Union, which I have the honor to represent here to-day, has within its ranks a large number of women who are, or have been, engaged in the profession of teaching. The combination of temperance worker and teacher naturally led to great interest in the effort to safeguard the young against alcoholism by incorporating in the school curriculum, in connection with the study of physiology and hygiene, the results of laboratory investigations of the effects of alcohol on the human body. This instruction has been greatly hampered in its influence for good by the hostility of some educators; yet its value has been recognized in many homes and certified to by many who have enjoyed its benefits.

In New York State several years ago an attempt was made by friends of moderate drinking to weaken the temperance instruction law. The State W. C. T. U. sent a circular letter to hundreds of mothers asking an opinion of the value of this instruction as seen in its effects on their own children. A large number of replies was received, all testifying that wherever the law had been faithfully observed and the instruction given without adverse comment the effect on the children was to cause them to resolve in favor of total abstinence.

Very interesting instances might be given of children from drinking families, some of them foreigners by birth, who have become total abstainers through the influence of faithful teachers of physiology and hygiene.

The value of temperance instruction has been recognized by employers of labor, also, such as railroads, street car companies, steel corporations, bonding companies and many other companies dealing with large numbers of men. They have learned through it that there is no good reason why men should drink liquors containing a dulling stupefying poison like alcohol and as clear brains are necessary in these days of rush and competition the large business corporation which does not now put restrictions on the drinking habit of its employes is an exception.

The commercial value of the temperance instruction of American schools has attracted attention in European countries; consequently men conducting large manufacturing enterprises in England, Belgium, France and Germany have been asking for like education in their public schools.

The possibilities wrapped up in this instruction for improvement in health and morals appeals to the medical profession, and some thousands of England's physicians

have united in memorializing the British Parliament for a temperance instruction law. The Emperor of Germany, after personal study of the American system, has introduced alcohol physiology into the elementary schools of his empire.

These are noteworthy indications of the estimate that men of keen business perception set on temperance education. They realize that drunken employes are a great loss to the industries of a nation.

Valuable as have been the results of the endeavor to forewarn the children of the nation against the formation of alcoholic habits, much more might have been accomplished had all educators and medical men been in active sympathy with these teachings. The errors and weaknesses complained of might have been eliminated sooner if aided by friendly criticism. The adoption of Mrs. Hunt's reply to the Committee of Fifty as a United States Government reply has done much to discourage opposition to this movement, hence greater results may be expected in the next decade than in all the troubled years of its past history.

There is pressing need, however, of an extension of temperance instruction so that the adult population may be touched more closely. We have university extension lectures on many subjects; why can not we have some systematic course of extension lectures on alcohol physiology? If a series of public lectures, covering the main points of alcohol physiology on which leading investigators agree, were arranged for in school houses through the co-operation of physicians, educators and school mothers' clubs, vast good would certainly be accomplished. In a few cities boards of health and the Woman's Christian Temperance Union have co-operated in holding meetings devoted to health topics and to discussions of the evils of "patent medicines." But if county medical societies were to arrange with school authorities for a series of lectures on alcoholic drinks it would attract widespread attention; the press, ever ready to report the new and striking, would give such matter all the necessary head lines and good audiences would be assured.

The need of some such movement is manifest everywhere. The ravages of alcoholic drink are to be seen in the remotest villages of our country, and native races on other shores coming into contact with our traders are perishing by thousands from the white man's rum. Jails, asylums for the insane and the feeble minded, hospitals, poor houses are all crowded with the victims, direct or indirect of alcoholism. A physician connected with an asylum containing over four hundred feeble-minded girls told me that she had studied the history of each inmate, and could say truthfully that about 90 per cent. were in that institution as the result of the drunkenness of one or both parents. The brothels and dives of our great cities are kept supplied with girls largely through the agency of alcoholic drinks. Girls do not seem to know that wine and beer inflame the passions, and at the same time lessen self-control and impair the judgment, and for lack of this knowledge thousands of girls are destroyed, body and soul, every year. Evil men know the effects likely to be produced by these drinks, so lure thoughtless girls to partake of the wine or the beer under pretense of friendship and having a "lark," but the end thereof is shame, disgrace and destruction. Rudyard Kipling, with the true poet's heart to feel for humanity, saw this frightful evil in Buffalo some years ago and declared that it made him a prohibitionist. Would it not make every manly man with the instincts of a savior of

* Read in the Section on Hygiene and Sanitary Science at the Fifty-seventh Annual Session of the American Medical Association, Boston, 1906.

the weaker sex feel the same way if it were brought directly before his eyes as it was with Kipling? Physicians connected with hospitals have found sad cases of young women from good homes who have been led from virtue through indulgence in wine. Only a few days ago in Chicago four girls from respectable homes were found dead drunk, or worse, in a carriage at the back door of a dive where they had been left by order of the men who a few hours before professed to be their friends and took them out for a "good time." Knowledge of the danger lurking in the ruby wine or the foamy beer might save many a thoughtless girl. Too often the instruction given in the schools had no deterrent effect because the teacher lacked sympathy with the subject and taught it with a sneer. Too often the sneer was the result of the way the subject was treated in institutes which such teachers attended. For this and other cogent reasons supplementary education on alcohol coming with strong medical authority is a necessity.

It is sorely needed by young men as well as young women. Thousands of young men, many even from christian homes, drink during the college years, thus losing much of intellectual uplift, and thereby handicapping themselves for the race of life. They seem to think it smart or daring to get drunk. If the universities provided lectures on the injurious effects of alcohol on the brain and nerves, with explanations of its seductive nature in enchaining its victims, might there not be a mitigation of the drunkenness among students which so vexes the presidents of some colleges? It would not seem so glorious an adventure to get drunk if young men were told that the eminent student of alcohol, Sir Benjamin Ward Richardson, M.D., had said that he believed a brain once stupefied by alcohol could never again be quite equal to what it was before.

In Europe the temperance movement which is now gaining such hopeful headway began with members of the medical profession. Several years ago in Paris a physician holding an important municipal office became alarmed by the prevailing misconceptions of the Atwater experiments and conceived a unique way of instituting a total abstinence propaganda. He prepared large placards setting forth the salient evils of alcoholic drinks and posted them in many public places throughout the city. This example has been copied by some of the boroughs of London and by other English and Scotch cities. A more striking way of conveying temperance instruction could scarcely be devised.

Why do people need to be told the nature and effects of alcoholic liquors in school, by lecture or by placard? Because the great majority of those who drink intoxicants believe they are useful if taken in moderation. The laboring man hears beer called liquid bread, and spends his money freely for it, not only because he likes it, but because he thinks it strengthens him and helps him to do his work. He knows that physicians have given beer and wine and whiskey to the sick "to strengthen and sustain them," and he reasons that what is food for the sick must also be beneficial to those in health. He has never heard of the large class of physicians who make little or no use of alcohol in their practice.

So, also, with mothers in the home. They know that some physicians give alcoholic liquors in consumption, in fevers, in pneumonia and other ills, and because of this these mothers keep the whiskey, or brandy, or "patent medicine" bottle on hand, and resort to it in every little weakness which may afflict the family. Glibly will women talk of how good a whiskey sling is for a cold, and rock-

and-rye and peruna are familiar "dopes" in many a household where the beverage use of the lightest liquor would not be tolerated. If a temperance worker suggests to such a woman the danger of setting up an alcoholic craving in her child the usual reward is a look of great superiority, and an assurance that she is not afraid. The superstitious belief in the medicinal and food qualities of alcoholic liquors, so commonly held, must be removed from the public mind before there can be much hope for the cessation of intemperance with all its attendant evils. This can be done only as physicians of distinguished position speak out fearlessly what the people need to know. Who can measure the good which has resulted from the clear, strong, scientific teachings against alcohol of the late Nathan S. Davis, of Chicago, and Sir Benjamin Ward Richardson, of London? May it not be that the influence of Dr. Davis has had much to do with the fact that many Chicago physicians have very little use for alcohol in their practice? For thirty years Dr. Davis had charge of the medical wards of Mercy Hospital, Chicago, and during all that time not a drop of alcoholic liquor was administered to a patient in those wards. While other hospitals were publishing death rates in typhoid fever of 16 to 25 per cent., Mercy Hospital had only a 5 per cent. death rate. In pneumonia, while other large hospitals had death rates varying from 24 to 38 per cent., Mercy Hospital had only a 12 per cent. death rate. Dr. Davis was justified by his hospital experiences in abjuring alcoholics.

The teachings of Nathan S. Davis, Richardson, Kasowitz, Woodhead, Treves, Hall, Crothers, Kellogg, Hewes, Madden and other physicians of like views have been put into leaflet and pamphlet and book form by the department of medical temperance of the National Woman's Christian Temperance Union, and are being read and studied in thousands of homes. This kind of temperance instruction is most hopeful, for when people learn that some of the most successful physicians of the world do not believe in the necessity or usefulness of alcoholic liquors in the treatment of disease they are much less likely to begin the use of these seductive drinks.

The department of medical temperance began the public agitation against "patent medicines" which the magazines have recently carried on so forcefully. The evils of "patent-medicine" using, however, will never cease while such multitudes of people believe that alcohol is a useful medicine. When told that peruna was found by analysts of the U. S. Government to be a cheap "cocktail" masquerading as a medicine, peruna lovers exclaimed, "Well, isn't alcohol a good medicine? Don't the doctors use it?"

It is evident to all close students of the drinking habits of the people that the tap-root of the nation's intemperance is the belief in the nourishing and strengthening properties of alcoholic liquors. Destroy this, and how long would an intelligent people spend \$1,000,000,000 a year on alcoholic drinks? But it never can be destroyed without large help from the medical profession. There should be published from time to time strong articles against alcohol by prominent physicians, and by many of them. The people have a right to expect that their medical advisers will warn them against whatever is injurious to physical health and strength.

A large section of the medical profession is in deep sympathy with every wise effort against intemperance; why can not something be done to focus this sentiment so that it shall bring light to the American people on a subject vital to their best interests? As superintendent

of the department of medical temperance of the National W. C. T. U., I have seen the great need, even in temperance homes, of instruction in the teachings of non-alcoholic physicians; and I wish to thank many of you present for help and encouragement in the work assigned to me of being a medium between good physicians and the people.

THE VALUE OF INSTRUCTION REGARDING ALCOHOL.*

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There is not to-day a more important question for educators to consider than the one here presented for discussion. I feel certain that we shall all enter on it with minds open to conviction on all points. We are all in search of that happy and safe middle ground of truth and justice which history has shown invariably lies between the positions occupied by the partisans in a controversy.

I wish first to formulate a few general principles or theses which may be discussed individually. The acceptance or rejection of each thesis in its order will bring us progressively nearer and nearer to a definitely formulated policy, acceptable to members of the teaching profession as well as to the medical profession.

I. Natural Objects and Natural Phenomena Should be Studied in all Public Schools.

All leading educators accord to the study of nature a prominent place in their systems of education. These systems may differ from each other widely in detail, but they possess one feature in common; and that is a provision for the study of nature.

Whether the pupil is a kindergarten child or a high school youth he is invariably interested in the study of natural objects. The discipline afforded the pupil is most natural and profitable. In the study of the object the senses are exercised and the attention cultivated; the formation of percepts and concepts involves the activity of memory and of reason. The description of objects gives opportunity to cultivate language, both oral and written. Incident to this expression of ideas the pupils get their drill in orthography, etymology, syntax, punctuation, writing, reading, perhaps, also more or less collateral work in arithmetic, geography, history and literature. The expression of ideas through diagrams and drawings should also be emphasized.

Thus a trip to the field, the lake shore, the swamp, the pasture, the woods, or to a flowing stream may provide material for a fortnight of most profitable and inspiring work. It is understood, of course, that all the nature work done in the grades should seem to be more or less spontaneous on the part of the pupils. The season, the weather, some astronomical phenomenon of unusual interest may furnish material for a week's work. The teacher takes the material at hand and makes the most of it.

This method of presenting the natural objects which form the material of the natural sciences precludes the possibility of a systematic presentation of the facts and principles of biology, physics, chemistry, geology, or astronomy. In the grades there should be no attempt

to separate out and systematize the facts and principles. Up to the age of 14 the whole field of Nature should be carefully and minutely observed, simple experiments performed, and the results of all observations carefully noted and used as subject-matter for a large part of the school work.

In the high school the study of nature is no less important than it is in the grammar schools. A smaller proportion of time should be devoted to it, and here for the first time the facts and laws of natural phenomena should be systematically presented in the form of sciences. The high school curriculum should provide science courses in biology, physics, chemistry, geology, astronomy, and perhaps other sciences, all carefully limited in breadth and depth to the mental attainments and capacity of the average pupil of high school age.

II. The Study of Living Forms and of Life Phenomena Make an Important and Essential Part of Nature Study.

Having set forth some of the pedagogic possibilities of nature study in the grammar schools and the relation of this work to the natural sciences as presented in the well-equipped high school of to-day, it now becomes necessary for me to show the relation of biology to natural science in this general system of education.

Any teacher in the grades will bear testimony to the abiding interest which pupils uniformly take in living forms and life phenomena. From the day when the pupil is allowed to bring his pet cat or dog to the kindergarten to serve for the subject of a lesson to the time when he is allowed to make a careful study of one plant from the seed which he plants in the ground, to the gathering of the next generation of seed, the teacher finds living forms and life phenomena an open sesame to the pupils' attention and interest.

In the presentation of these objects of study to children and youths, it is my observation that the interest is far more keenly awakened by the study of what an animal does than by the study of its structure. We all know how interesting to a boy or girl is a mill in operation; they like "to see the wheels go round."

So in the study of living nature the questions which the pupils ask make it evident that they are far more interested in the functions of the various parts of an animal than in the construction of the animal, i. e., they are more interested in physiology than in morphology.

III. The Physiology of Living Forms is the Most Interesting and Profitable Field of Biologic Study.

The facts and principles which make up the sum of our knowledge of living forms—our science of biology—may be classified under two general heads, comprising what we know of form and structure (morphology) and what we know of function (physiology). As already set forth above, the interest of the pupil is far more easily aroused in a question of action (physiology) than in a question of structure.

The instinctive interest of the pupil should be the teacher's guide.

In the other fields of nature study the pupil's interest in the action, rather than in the structural or physical qualities of the natural objects involved, has led teachers to dwell with special emphasis on the action rather than on the structure. In the light of this experience teachers may proceed with full confidence that in emphasizing the functions (physiology) of living objects they are in

* Read in the Section on Hygiene and Sanitary Science at the Fifty-seventh Annual Session of the American Medical Association, Boston, 1906.