WHAT IS LIFE.

To live is to do
What must be done;
To work and be true,
For work is soon done.
'Tis living for others,
To lighten their load:
'Tis helping your brothers,
And trusting in God.

TEMPERANCE PHYSIOLOGY.

FOR USE IN SCHOOLS AND BANDS OF HOPE

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CHAPTER I.—ALCOHOL.

Alcohol is a colorless liquid with a stinging taste; it burns without soot, giving little light, but great heat. It is lighter than water and cannot be frozen.

It is used to dissolve gums, resins, and oils, to make smokeless flames; to take from leaves, roots, barks, and seeds, materials for making perfumes and medicines, and to keep dead bodies from decaying.

People do not usually drink clear alcohol. Rum, whiskey, wine, cider, gin, brandy, beer, etc., are water and alcohol with different flavors. Many million gallons of alcohol in these liquors are drunk every year by the people of this country.

ORIGIN OF ALCOHOL.

Water forms the larger part of the juice of the grape, apple, and other plants. The solid part of green fruits is mainly starch. Under the ripening action of the sun, this starch turns to sugar; this sugar gives us our sweet-tasting fruits and plants, and from such juices, boiled down, we get the sugar used for food.

If this fruit or plant juice is drawn off from its pulp, and then exposed to the open air at summer heart, the sweet part changes, it is no longer sugar, because it has separated into a liquid called alcohol and a gas named carbonic acid. Much of this gas goes off into the air, the alcohol remains in the liquid, changing a wholesome food into a dangerous drink.

ALCOHOL A POISON.*

A poison is any substance whose nature it is, when taken into the body either in small or large quantities, to injure health or destroy life.

Proper food is wrought into our bodies; but poisons† are thrown out of them, if possible, because unfit to be used in making any of their parts.

In large doses, in its pure state, or when diluted, as in brandy, whiskey, rum, or gin, alcohol is often fatal to life. Deaths of men women and children from poisonous doses of this drug are common.

In smaller quantities, or in the lighter liquors—beer, wine, and cider—when used as a beverage, it injures the health in proportion to the amount taken.

WHAT IS A NARCOTIC?

Any substance that deadens the brain and nerves is called a narcotic; for example, ether and chloroform, which are given by the dentist, that he may extract teeth without pain. Alcohol is taken for similar purposes, and is a powerful narcotic.

ALCOHOL AND WATER.

Into a bottle, half full of water, pour alcohol to the top, then shake it well, being very careful not to spill any of the liquid. Now, the bottle is not full. The alcohol has mixed with the water, and it does this wherever it has a chance.

Oil and water will not unite, alcohol and water will always unite.

In our study of the human body, which is seven parts out of eight water,‡ we shall see how alcohol, beginning at the lips, unites with the water in every part of the drinker's body which it reaches, thus robbing it of the needed liquid.

ALCOHOLIC APPETITE.

Like all narcotic poisons, alcohol has the fatal power of creating an increasing appetite for itself, that demands not only more frequent, but stronger and larger doses. The greater its work of ruin, the harder and almost impossible to overcome will be its demand.

The appetite does not gain with equal rapidity upon all; but no one can tell how long he will be satisfied with a little. This craving, so easily formed, and so hard to overcome, clings to its victims. Sometimes after slumbering through years of abstinence it is wakened by the first taste.

"The custom of putting wine and other alcoholic liquors into cooked foods, is a dangerous one, often causing the formation or return of a fearful appetite. The narcotic or deadening effect of alcohol upon the nerves, unfits the drinker to realize his peril, therefore its use, even in small quantities, is a dangerous venture to the user.

In the United States over 60,000 persons every year die as drunkards, that is, are killed by alcohol. None of them expected to become drunkards when they began to drink liquor, but they were ignorant, or careless, of the power of a little alcohol to create an appetite for more.

HUMAN SKELETON.

‡I took one of the remains of the human body which have been preserved some thousands of years, and which is called an Egyptian mummy.

It was probably the body of one who had been a great priest or ruler; for it had been embalmed or preserved in the most expensive form of embalming and had been enclosed in a tomb which must have cost a small fortune.

I measured the mummy—its length, its girth, and the relative size of its head and limbs and trunk. From these measurements I was able to estimate what would have been the weight of the body when its owner was moving on the earth in the midst of life and health. The weight of the body at that time, I reckoned, would have been 128 pounds.

In the condition of a mummy, in which it was now before me, nothing remained but the dried skeleton or bony framework, and the muscles and other organs completely dried. The body, in fact, had, in the course of ages, lost all its water.

In this state it weighed just sixteen pounds, and, as eight times sixteen are one hundred and twenty-eight, it is clear that seven parts out of eight of the whole body, or one hundred and twelve pounds, had passed away as water. In the remaining weight was included that of the skeleton, which contains but ten percent of water, and some mere remnants of canvas and pitchy substances, which had been used by the embalmers, and which, like the skeleton, still continued perfect.

The soft parts of this human body, by which all its active life, its moving and thinking functions, had been carried on, were, in fact, nearly all removed by the drying process, or loss of water, to which they had been subjected. They had not been destroyed by passing into new forms of matter, as occurs when a dead substance is allowed to decay in the open air, but they had completely lost the water which once gave them size, flexibility, shape, and capacity for motion. —*Dr. B. W. Richardson, of London.*

REVIEW QUESTIONS.

1. What is alcohol?—Name some of its qualities.
2. What are the uses of alcohol?
3. From what is alcohol made?
4. How can you prove that alcohol is a poison?
5. How many persons every year die as drunkards?

(To be Continued.)

*Dr. A. B. Palmer of Michigan University says: "Medical writers admit that by far the most disastrous and frequent cause of poisoning in all our communities is the use of alcohol."

Dr. James Edmonds, of England, says: "The effects of no other common poison are more direct and certain than those of alcohol."

Dr. W. J. Youmans writes: "Alcohol . . . a brain poison."

Dr. Alden of Massachusetts, tells us: "On every organ they touch alcoholic drinks act as a poison. There is no such thing as their temperate use. They are always an enemy to the human body. They produce weakness, not strength; sickness not, health; death, not life.'

†Intoxicated means poisoned. The barbarians poisoned their arrows; hence, from the Latin *in* into—and *toxicum*, a poison into which arrows were dipped, we get the word which describes the condition of a person under the influence of alcohol.

NEW SHOES.

"I wonder if there can be a pair of shoes in it?"

Little Tim sat on the ground close beside a very ugly dark-colored stone jug. He eyed it sharply, but finding it quite impossible to see through its sides, pulled out the cork and peered anxiously in,

"Can't see nothin', but it's so dark in there I couldn't see if there was anything. I've a great mind to break the hateful old thing."

He sat for a while thinking how badly he wanted a pair of shoes to wear to the Sunday-school picnic. His mother had promised to wash and mend his clothes so that he might go looking very neat indeed, but the old shoes were far past all mending, and how could he go barefoot?

Then he began counting the chances of his father being very angry when he should find his bottle broken. He did not like the idea of getting a whipping for it, as was very likely, but how could he resist the temptation of making sure about those shoes? The more he thought of them the more he couldn't. He sprang up and hunted around until he found a good-sized brickbat which he flung with such vigorous hand and correct aim that the next moment the old bottle lay in pieces before his eyes.

How eagerly he bent over them in in the hope of finding not only what he was so longing for, but, perhaps, other treasures. But his poor little heart sank as he turned over the fragments with trembling fingers. Nothing could be found among the broken bits wet on the inside with a bad smelling liquid.

Tim sat down again and sobbed as he had never sobbed before; so hard that he did not hear a step beside him until a voice said:

"Well, what's all this?"

He sprang up in great alarm. It was his father who always slept late in the morning and was very seldom awake so early as this.

"Who broke my bottle?" he asked.

"I did," said Tim catching his breath half in terror and half between his sobs.

"Why did you?" Tim looked up. The voice did not sound quite so terrible as he had expected. The truth was his father had been touched at sight of the forlorn figure, so very small and so sorrowful which had bent over the broken bottle.

"Why," he said, "I was lookin' for a pair of new shoes. I want a pair of shoes awful bad to wear to the picnic. All the other little chaps wears shoes."

"How came you to think you'd find shoes in a bottle?"

"Why, mamma said so. I asked her for some new shoes and she said they had gone into that black bottle, and that lots of other things had gone into it, too—coats and hats, and bread and meat and things—and I thought if I broke it I'd find 'em all, and there ain't a thing in it—and mamma never said what wasn't so before—and I thought 'twould be so—sure."

And Tim hardly able to sob out the words feeling how keenly his trust in mother's word had added to his great disappointment, sat down again and cried harder than ever

His father seated himself on a box in the disorderly yard and remained quiet for so long a time that Tim at last looked timidly up.

"I'm real sorry I broke your bottle, father. I'll never do it again."

"No, I guess you won't," he said, laying a hand on the rough 'ittle head as he went away, leaving Tim overcome with astonishment that father had not been angry with him.

Two days after, on the very evening before the picnic, he handed Tim a parcel, telling him to open it.

"New shoes, new shoes," he shouted. "Oh, father, did you get a new bottle, and were they in it?"

"No, my boy, there isn't going to be a new bottle. Your mother was right all the time—the things all went into the bottle, but you see getting them out is no easy matter, so I'm going to keep them out after this."—*N. Y. Observer.*

HEART BEATS.

Dr. N. B. Richardson, of London, the noted physician, says he was recently able to convey a considerable amount of conviction to an intelligent scholar by a simple experiment. The scholar was singing the praise of the "ruddy bumper," and saying he could not get through the day without it, when Dr. Richardson said to him:

"Will you be kind enough to feel my pulse as I stand here?"

He did so. I said, "Count it carefully; what does it say?"

"Your pulse says seventy-four."

I then sat down in a chair and asked him to count it again. He did so, and said: "Your pulse has gone down to seventy."

I then lay down on the lounge and said: "Will you take it again?"

He replied, "Why, it is only sixty four; what an extraordinary thing!"

I then said: "When you lie down at night that is the way nature gives your heart rest. You know nothing about it, but that beating organ is resting to that extent; and if you reckon it up it is a great deal of rest, because in lying down the heart is doing ten strokes less a minute. Multiply that by sixty and it is 600; multiply it by eight hours, and within a fraction it is 5,000 strokes, different; and as the heart is throwing six ounces of blood at every stroke, it makes a difference of 30,000 ounces of lifting during the night."

"When I lie down at night without any alcohol, that is the rest my heart gets. But when you take your wine or grog, you do not allow that rest, for the influence of alcohol is to increase the number of strokes, and instead of getting this rest you put on something like 15,000 extra strokes, and the result is you rise up very seedy and unfit for the next day's work till you have taken a little more of the 'ruddy bumper,' which you say is the soul of man below."—*Scientific American.*

THE BAD KNEE.

In the Midland counties there is a large boarding-school for boys. We have seen sixty or seventy of them at their desks, and fine, merry, strong, clean lads they were. No intoxicating drinks whatever are placed on the table, and yet several brewers and wine-merchants send their sons there for education. This proves that even dealers in strong drink do not regard it as essential to their intellectual activity and physical health. Well, one of the young gentlemen had a white swelling on his knee, and was sent home for medical treatment. When the family doctor arrived and examined the limb he evidently thought it a serious case and said—

"What sort of a school are you at?"

"Oh, a jolly school."

"What kind of a master have you?"

"Oh, a jolly master."

"But what sort of a table does he keep?"

"Oh, a jolly table."

"Yes, yes; but what does he give you to drink?"

"Oh, the governor's a teetotaller, he puts nothing but water on the table."

"Then," said the doctor to the patient's anxious mother, "we can save his limb. Do not fear, he will soon get better." And he did so, and he went back to his desk, his games, and his "jolly table"—not less jolly to him now that he knew water-drinking had been so good for him.—*Rev. George W. McCree in Union Signal.*