

Written for this Paper.

TALK TO BOYS.

IV.—TOBACCO AND THE CIRCULATORY SYSTEM.

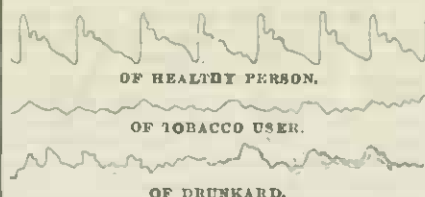
It is not claimed that all the evils heretofore mentioned or that may be enumerated as arising from the use of tobacco always result from free indulgence. But the tobacco habit is one of the most prolific of causes that produce them, and some are sure to follow in every case where the habit prevails. Some are peculiar to the drug, while others may be produced from a variety of causes. Almost every boy understands, through the first experience of those who have tried tobacco chewing, that it produces nausea and vomiting; but there are many other things that also incite nausea, and usually men are expected to have sense enough to avoid them whenever practicable, though they do not always do so.

Smokers and chewers do not always feel themselves being injured by the narcotic, hence they often fancy it is not doing them any harm. How untrue they are who "lay this flattering unction to their souls" on such a basis may be understood when it is suggested that the poison of the most virulent diseases mingles unfelt and unobserved in the blood while preparing for outward development; the virus of hydrophobia may lie dormant and unperceived for months and even years; indeed, but a small proportion of those bitten by rabid animals are attacked by hydrophobia. Yet that man would be very foolish who would risk being bitten merely because there may be twenty-five or even fifty chances of escape to one of seizure with the terrible disease; and with the tobacco habit the probable immunities from future serious trouble are not nearly so numerous as in the case of dog-bites.

The poisonous principle in tobacco finds ready access in every part of the body through the circulatory system. This system comprises the heart, blood, blood-vessels, etc. The heart is the great center of this circulatory apparatus. It is a self-operating force-pump which, alternately filling and emptying itself, keeps up the circulation of the blood through the body, from earliest infancy to the last moment of life. This marvelous little machine, about the size of a person's fist, throbs on continually at the rate of 100,000 beats per day, year in, year out, often 3,000,000 without a single stop, and in such lives as we sometimes see has propelled half a million tons of blood, and repaired itself as it has wasted, during its patient, unflinching labor. Yet when, by any interference, it ceases to work, mortal life is ended. Other organs falter and fail, but so long as a flutter lingers at the heart, the spark of life is not extinct, and there is hope of restoration.

With the heart's action impaired or weakened, the days of man must be out short. How the perfect rhythm of the throb in health of this wonderful muscle may be compared with its movement when obstructed by certain substances taken into the body, is told by that ingenious instrument, the sphygmograph, or pulse-writer. Here is an illustration of tests made by the

celebrated Dr. Parkes, of the sanitary department of the British army:



A few weeks ago, in Liverpool, England, a coroner's jury was summoned to ascertain the cause of death in a young man whose heart had suddenly ceased to work. It proved to be just such a case as that indicated here by the sphygmograph, carried to its legitimate result. The heart valves were paralyzed by nicotine—he had dropped dead of smoker's heart, brought on through the cigarette habit.

As is here shown, the pulse of the tobacco-user indicates unmistakably the injury which the drug works upon the heart. It has lost the firm, steady beat of health, and is feeble and irregular. The sphygmograph illustrates the story. It describes the condition now so well known to physicians as tobacco heart. Those medical authorities who have made careful investigation of the subject state that not less than one in every four users of tobacco have this kind of heart. The examining surgeons of the United States army say that a large share of the young men who are rejected are found to be suffering from tobacco heart. They are unfit for soldiers; are they not also unfit for husbands and fathers?

In writing of the disease known as *angina pectoris*, a very painful and dangerous complaint believed to depend upon fatty degeneration of the heart, Dr. Gibbons says that in a number of instances within his knowledge it entirely disappeared on the patient abandoning the tobacco habit; in one case it temporarily returned to one who had been cured in this way, by his inhaling the smoke freely in company one evening, without smoking himself. The affliction is marked by sharp pain in the region of the heart, shooting into the chest, neck and arm, with faintness and prostration; persons affected are apt to die suddenly, sitting up or lying in bed. Dr. Gibbons states that "diseases of the heart and large arteries appear to be increasing to an alarming extent in some parts of the country, more particularly on the Pacific coast. They are generally incurable, and inevitably fatal. It is worthy of serious inquiry how far the increase is chargeable to the effects of tobacco and alcohol, accumulating from generation to generation."

Sometimes we see persons who have abandoned the tobacco habit grow fat rapidly. The production of fat is so great as to induce them to return to the old practice in self-defense. It is the same as with the morphine or opium fiend who must have the poison to prolong his life, which in the end is all the more miserable. Such persons as have to return to the tobacco habit to prevent and increase of adipose tissue are troubled with fatty heart, which is a certain harbinger of early and sudden death. Their only hope of prolonging life is to break away from tobacco completely ere it is too late to do so without producing a fatal result.

The blood is a living substance, com-

pored of organized globules or corpuscles, visible with the microscope, and swimming in serous or watery fluid. The effect of tobacco in the blood is to change the shape of these corpuscles, or, in other words, to kill them, as do other poisons; hence the peculiar pallor of the inveterate smoker, caused by the injury to the red corpuscles in the blood. Of the effects of tobacco in the circulatory system, Dr. Richardson says: "In the heart it causes debility of the organ, and irregular action; in the blood it causes undue fluidity, and change in the red corpuscles." This change in the blood can be perceived by aid of the microscope. The intelligent reader, contemplating the great importance of pure and fully vitalized blood, on which depends the healthy action of the body, can put to himself the question whether the poisonous nicotine, which makes a change so great as to be detected by the microscope, can mingle with the blood day after day, and year after year, with impunity.

It may be asked why it is, if these facts are definitely determined, that some tobacco users live to old age, and are apparently hale and hearty. The answer is in the suggestion to note the fact that those of this class who are physically strong are mentally dull; also that the human system has a wonderful power of adaptation, so great, indeed, that one may accustom himself gradually to the use of almost any poison, until he can take it in enormous doses, and apparently without suffering immediate injury. If it were not for this, many tobacco users would not live twenty-four hours, because of dissemination of the poison through the circulatory system. Paul du Chailu, being bitten frequently by snakes, had his body so strongly impregnated with the poison that the bite of the most venomous reptile seemed to have very little effect upon him. Yet the poison which had been thus injected into his system had an injurious effect upon his health. Persons may train themselves to the use of large quantities of opium, morphine, or other poisons, but their physical and mental powers are weakened thereby.

So it is with tobacco. Its use causes destructive changes by which death may be slowly taking place all the time. This fact leads Dr. Kellogg, whose views are in conformity to those of other leading physicians who have given the subject careful attention, to declare that without doubt those who "habitually use tobacco actually die of its use, since their lives are shortened, or their systems prepared for the ready reception of some disease which carries them off prematurely. No boy or young man can afford to acquire the practice of using this filthy weed. Its effects upon adults are bad enough, but upon boys and young men its influence is even worse." The septuagenarian who is a tobacco-user would have lived longer still, and might have been a centenarian, but for the poison nicotine which prematurely exhausted the powerful little heart-engine or deprived the blood of its life-giving qualities.

A cloud of grasshoppers arrived at Tucson, A. T., last week, and damaged gardens are now said to be numerous.