

2. Tell how best to study.
3. Discuss persistence of impressions; habit; heredity.
4. Show how the mind acts without our knowledge.
5. Tell the nature of sleep; its use; how much is required; and when to sleep.
6. Tell how sleeplessness is produced by an empty stomach; by worry; and by lack of work.
7. Tell the nature of dreams and of what ideas they usually consist.
8. Show how a change of occupation rests the brain.
9. Show that good health is needed for good brain work, and tell how exercise affects the brain.
10. Show the nature of nervousness, and of hysteria, and tell how to overcome them.
11. Give the causes of insanity, its three forms, and its treatment.
12. Give the result of blows upon the brain.
13. Give the nature of a stroke of apoplexy, and show how it produces paralysis.
14. Discuss fits; their causes, forms, and treatment.
15. Discuss panics.

## CHAPTER XXXIII

## EFFECTS OF NARCOTICS UPON THE MIND

**572. Stages of action.** — A perfect engine acts smoothly, and with an ease of motion which suggests a delight in its work. The body is an engine at the service of the will. A derangement of any part disturbs the action of the brain according to the extent of the disorder. While little or no alcohol can ever be found in the brain, yet the leucomaines and other poisons produced by the action of alcohol reach the whole body, and produce a profound effect upon the brain sooner than upon any other part. Three stages of the effects of alcohol are well marked:—

First, there is a stage of *stimulation*; second, the cells act in an uncertain manner. This is the stage of *disturbed* action; third, the cells act slowly or even cease to act. This is the stage of *paralysis*. All three stages are often seen in drunken men upon the streets.

**573. Stage of stimulation.** — A small amount of alcohol causes the blood to circulate more rapidly. More food reaches the brain cells, and so they show more activity. It produces a happy state of mind in which men overestimate their abilities. Men drink mainly for this effect of the alcohol.

Some gifted men with weak wills exert themselves only when under the influence of strong drink, and from this fact many reason that alcohol increases the brain power. These gifted men hang about the saloons, eating little and drinking much. In this condition their brains receive no strength or energy to devote to any object. A drink fur-

nishes a quick stimulation which at once excites the brain to great activity. Thus it is enabled to do brilliant work while the effects of the alcohol last. In half an hour the poisonous effects assert themselves, and the man's condition is worse than ever. Good food and a regular life would give such a man a continuous store of energy with which he could perform brilliant work day after day. Alcohol is such a poor substitute for the food that it enables him to work only for a few moments at a time.

**574. Stage of disturbed action.**—The stimulation of a drink of alcohol is uncertain, and, at best, lasts only for a few minutes. Alcohol uses oxygen which would otherwise be available for the brain cells as well as for the other cells of the body. An ounce and a half of alcohol a day will begin to interfere with oxidation and to disturb the brain, and far less will do so if it all is taken at once.

**575. Moral effect.**—Alcohol weakens and disturbs the action of the brain cells, beginning with those most highly developed. These are thoughts of our relation to other men. So a person beginning to be under the influence of drink will be selfish and inconsiderate of others. He will insult his friends and get angry without cause.

**576. Effect upon his judgment.**—The judgment or reasoning concerning the effect of one's acts upon himself is the next to be disturbed. He becomes daring and careless. He proposes impossible plans in business. If he has a tendency to commit a crime, he will do it now. Many a thief or murderer has gotten himself into this state of drunkenness to enable him to commit his crime recklessly. If a man has a tendency to swear or to be unkind, he will show it, for the restraint of judgment is gone. The blunted judgment takes no note of coming danger or of business failure. Many a man drinks to drown trouble.

**577. Effect upon the motor regions.**—Shortly after the judgment is clouded the motor regions begin to fail. Then the hand will be unsteady, and the legs will totter as they support the body. The person is now visibly drunk, and his judgment is so far gone that he could not decide where to go even if his legs could carry him. The cerebellum is also affected, so that he is still more uncertain in his movements.

**578. Effect upon the sensory regions.**—Next after the motor regions, the sensory regions begin to fail. Sensations of touch are first affected, so that the drinker cannot feel the glass at his lips. In former days it used to be the custom to make a person drunk and insensitive before he underwent a surgical operation. After the sensations of touch are benumbed the sight begins to fail. A drunken man sees double, or the buildings and trees seem to sway and dance before his eyes. Hearing, smell, and taste are also lessened, so that he does not heed loathsome surroundings, but will lie contented in a filthy gutter.

**579. Stage of paralysis.**—When the thought, motor, and sensory regions of a man's brain are all weakened or stopped in their action, the mind is dull and drowsy, and soon he is in a condition resembling a deep sleep, from which he can be roused only with difficulty. The medulla and spinal cord still carry on the processes of life, but they too begin to be overpowered. By the time the cerebrum is almost overcome, the spinal cord is also much decreased in action so that there is no response to pricks or blows. Then the medulla is all that remains of the central nervous system. It continues to send out impulses for respiration. The respiration and circulation are the only remaining signs of life, but even they are weak, and may become almost imperceptible. Since little oxy-

gen enters the body, little heat is produced. If the night is at all cold, the drunken man is in great danger of freezing to death. It is only a step to the total cessation of the action of the medulla and failure of respiration.

In cities men often are found in the streets in the last stage of drunkenness. They closely resemble cases in which the action of the brain is destroyed by a severe blow upon the head which leaves no external mark.

**580. Effects of long-continued drinking.** — Either heavy or moderate drinking may cause in the brain and mind a slow change which resembles an excessively slowly developed drunken state. As in drunkenness, the first change is a disregard for the comfort of others. Then the thoughts wander, and the mind cannot grasp a situation as it once could. Later the motor region is affected so that the hand trembles and the gait is unsteady. All these changes are like those which naturally occur in old persons. Drink makes a person old too soon. In many drinkers the judgment entirely disappears, and the drinker is insane. He is in a continual state resembling drunkenness. Alcohol produces more insanity than all other causes combined.

**581. Effects of bad company.** — The low companionship which a drunkard keeps, itself tends to dwarf the mind and to make one careless in morals and judgment. Men also lead each other into temptation. If a man were alone, one drink might satisfy him, but meeting others, he lingers to talk, and so drinks again to keep company with the rest.

**582. Delirium tremens.** — After a prolonged drunken state, or after severe injury, a heavy drinker is liable to violent disturbance of the mind, called *delirium tremens*. In it his sensory regions form exaggerated memories of fantastic and hideous views, in which demons and foul reptiles seem present on purpose to torment him. In his fear he will cry out and will use violence in his endeavors to escape. The trouble may last continually for several days, and may permit the sufferer to take neither food nor sleep.

**583. Alcoholic inheritance.** — The weak body and mind of a confirmed drunkard are almost surely transmitted to his children, but any one who drinks at all may transmit some undesirable traits. The appetite for liquor also may be transmitted to the children. If they are kept from temptation, they will lead temperate lives, but they will be very apt to yield to the desire for drink if the temptation is thrown in their way.

**584. Treatment of the alcoholic habit.** — By a few repetitions of drink the memory of its sensations becomes so strong that it overrules the thoughts and will, and compels its own gratification in more drink. At first, a man can resist the appeals of his appetite, but after the cells of the sensory region have gained gratification a few times, they, instead of the will, direct the motor region to secure the drink. Many a drunkard can no more control his appetite than he can control the memory of the drink. What was once a pleasant memory of the subordinate sensory region, becomes the giant demon, enslaving the kingly thought regions.

A drinker should not be laughed at or scorned, but he should be encouraged to use his will in overcoming the desire for drink. To this end everything ennobling should be placed in his way. Good books, good companionship, and, above all, the encouragement of sincerely Christian people are almost absolute necessities in his reformation.

Drugs have almost no effect upon the habit, for they cannot abolish memory nor increase the will power. Total abstinence, not only from the drink, but also from buildings where it is sold and from the association of those who have been drinkers, is necessary for a cure.

**585. Tobacco.** — By smoking, a greater amount of blood is drawn into the head, and the increased flow of blood seems to make the brain more active. Sucking air through a small quill produces the same effect upon the brain as

sucking smoke through a pipe. In fact, smokers often cannot tell by the taste alone, whether the pipe or cigar is alight or not; but they unconsciously judge mainly by seeing the smoke. Since tobacco weakens the heart, less blood will flow through the body when tobacco in any form is used, and this fact will tend to make the mind act less strongly than before. The nicotine is also a direct nerve poison.

**586. Drug habits.** — Opium, cocaine, and other narcotic drugs whose use may become a habit, affect the mind in the same way as alcohol. Every one who habitually uses any of these drugs will surely become a mental as well as a physical wreck. Opium, especially, seems to have a fiendish effect in destroying the morality of its users. They begin by lying and cheating in order to obtain the drug without the knowledge of their friends, and they finally end by becoming dishonest in all things. But the drug produces a weak mind and body which soon end in death. Most of these drugs are far more dangerous than tobacco or alcohol.

**587. Ether and chloroform anæsthesia.** — Ether and chloroform are both substances manufactured from alcohol. When they are breathed into the lungs they produce effects which resemble a rapid state of drunkenness carried to its last stage. For a brief time, the brain is excited and then its faculties disappear one after another. In from five to fifteen minutes the brain and spinal cord are completely overcome, and only the medulla continues in action to carry on respiration and the circulation of blood. A person may be safely kept in this condition for two or three hours. Upon stopping the inhalation the effects pass off in reverse order, until in from ten minutes to an hour one has the full use of his brain again. The thought regions are overcome long before the motor regions, and so a person taking ether may struggle and cry out in apparent agony long after he has become completely unconscious. The struggling is reflex and takes place while a person is insensible to suffering.

## SUMMARY

1. Because a small quantity of alcohol stimulates the heart and increases the flow of blood in the brain, it stimulates the mind to greater action. This lasts for a short time only.
2. A little more alcohol is a narcotic to the brain cells and weakens them so that they act in an uncertain manner.
3. The first action to be disturbed is one's thoughts of the welfare of others, and the second is the judgment of one's own affairs. At this stage the actions are wild and foolish.
4. Next the motor region is disturbed, and a man is now noticeably drunk.
5. Next his sensory regions are disturbed so that he cannot see and hear and feel so well as he should. He is now dull and sleepy, or dead drunk.
6. Next the medulla is affected so that the respiration and action of the heart are disturbed. Then death is near at hand.
7. Continued drinking slowly overcomes the faculties of the mind in the same order that they are overcome in drunkenness. When the cells are seriously affected, the person is insane.
8. The habit of taking alcohol may become so deeply set in the brain cells that it is a disease overcoming the will.
9. Sucking in tobacco smoke causes more blood to flow to the brain, and so slightly increases its power, but the tobacco itself weakens the brain.
10. Opium, cocaine, and all other drugs, when habitually used, always weaken and destroy the mind.

## REVIEW TOPICS

1. Tell why alcohol affects the brain and give the three stages of its effects.
2. Describe the stage of stimulation.
3. Trace the career of a man as he becomes more and more under the influence of drink, giving the effects of alcohol upon the moral feelings; upon the judgment; upon the motor region and cerebellum; upon the sensory region; and upon the medulla.
4. Describe the permanent effects which long-continued drinking produces in the brain.
5. Show how the bad company kept by drinkers affects their minds.
6. Describe delirium tremens.
7. Show that the taste for alcohol and the effects of its use may be transmitted to children.
8. Show that the alcohol habit is a disease, and give its treatment.
9. Tell how tobacco affects the brain.
10. Tell how drug habits, as opium using, affect the brain.
11. Tell how ether and chloroform produce insensibility, and how the state resembles drunkenness.

## CHAPTER XXXIV

## TASTE, SMELL, AND HEARING

**588. Touch.** — Touch is a special sense. Its sensations are aroused without the need of any special organ. So the discussion of sensory nerves is really a discussion of the special sense of touch. (See p. 269.)

**589. Taste.** — Taste is a special sense which is located in the tongue, palate, and pharynx. All these parts are endowed with a delicate sense of touch, but in addition two pairs of cranial nerves carry special sensations of taste. The impulses are aroused by the direct action of substances upon the nerves. The motions of chewing and a good flow of saliva aid the sense of taste by bringing food in contact with the nerves, while a dry substance, or one which will not dissolve in water, can have no taste. All tastes are some combination of sweet, sour, bitter, and salt tastes. Sweetness and sourness are recognized mainly by the front part of the tongue, and bitterness and saltness by the back parts and pharynx.

Taste is greatly influenced by the sense of smell. The real taste of coffee is greatly changed by the odor which reaches the back part of the nose as it is swallowed.

**590. Use of taste.** — Taste enables a man to detect spoiled or unwholesome food. The sense is capable of great education. The prices of different grades of tea are determined by expert tea tasters, who devote their whole time to tasting different samples. Alcohol and tobacco