POPULAR EDUCATIONAL SERIES

FIRST LESSONS IN Physiology AND Hygiene

BY

W. H. Dimsmore Jr.

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FIRST LESSONS

—IN—

Physiology and Hygiene

— WITH —

SCIENTIFIC INSTRUCTION CONCERNING THE PHYSIOLOGICAL EFFECTS OF ALCOHOLIC STIMULANTS AND NARCOTICS ON THE HUMAN BODY.

A TEXT BOOK FOR THE COMMON SCHOOLS.

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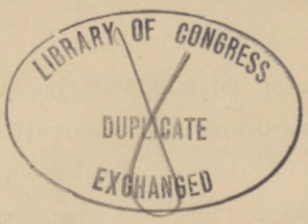

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INTRODUCTION.

It has been the hope of the writer in preparing this little volume to make it so clear and simple that the pupils, even in the primary schools, may be able to understand both the language used and the thoughts expressed. Educators have found that young children become confused and discouraged when they are expected to study several pages of solid matter and discern the important parts, but that the pupils remember well what is told them on the same subject.

This work has, therefore, been written as a series of questions and answers.

It is thought that the questions chosen are such as would naturally arise in the minds of parents, teachers and others when inquiring for information on this important subject. The effects of alcoholic stimulants and narcotics upon the human body have been described as directly and impartially as possible. The simple truth concerning the terrible effects which follow the use of alcoholic stimulants is enough to cause the student to turn away from alcohol with a shudder.

Review questions are frequently given, with additional inquiries, in order that the truth may be more forcibly impressed upon the mind.

The portions of the manuscript relating to the physiological effects of alcoholic stimulants upon the human body have been read and discussed at the meeting of York County Medical Society; and the writer would hereby express his grateful acknowledgment to the members of the society for the lengthy discussion of the papers, also for valuable suggestions offered and the kind endorsement of the work given for publication.

T. H. D., JR.

YORK, PA., June, 1885.

NOTE.

For the temporary use of the cuts in this work the author is indebted to the courtesy of A. S. Barnes & Co., publishers of Steele's Hygienic Physiology.

AUTHORITIES USED FOR REFERENCE.

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(2) CARPENTER, Dr. W. B., F.R.S. Alcoholic Liquors.

(3) GREENFIELD, Dr. W. S. Alcohol: Its use and abuse.

(4) JOHNSON, Prof. J. F. W., F.R.C.S. The Chemistry of Common Life.

(5) MARTIN, Dr. H. N. The Human Body.

(6) RICHARDSON, Dr. B. W., F.R.S. Alcohol on the Body and Mind.

(7) RINGER, Dr. SYDNEY. Hand-book of Therapeutics.

(8) TAYLOR, Dr. A. S., F.R.S. A Treatise on Poisons.

(9) THE PHILADELPHIA MEDICAL TIMES.

(10) THE YORK (PA.) COUNTY MEDICAL SOCIETY.

(11) YEO, Dr. GERALD F., F.R.C.S. Manual of Physiology.

(12) CARPENTER, Dr. W. B. Mental Physiology.

At a stated meeting of the "York County Medical Society," held in the Hospital and Dispensary building at York, Pa., on May 7th, 1885, the following resolution was unanimously adopted:

Resolved, That the members of this society, having this day heard and discussed the papers by Prof. T. H. Dinsmore, Jr., relating to the Physiological effects of alcoholic stimulants upon the stomach, liver, heart, circulation, kidneys, brain and other parts of the human body, do endorse the same as being clearly expressed, medically correct, and in entire accord with our experience as practitioners.

W. T. BACON, *President.*

SAMUEL J. ROUSE, *Secretary.*

I have reviewed the manuscript of the "First Lessons in Physiology and Hygiene," by Prof. Thomas H. Dinsmore, Jr., and pronounce it the best I have seen on the subject. The plan of the work is such as to lead the pupils gradually onward. The thoughts are couched in the plain and easy language that pupils can remember, and the information concerning the effects of alcohol upon the human system is valuable.

E. W. SOUTH, M.D.

PLAINFIELD, N. J., AUGUST 1, 1885.

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PART FIRST.

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PART FIFTH.

Suggestions to Teachers.

THE law of Pennsylvania states that the subject of Physiology and Hygiene shall be introduced and studied as a regular branch by *all pupils* in *all departments* of the Public Schools of the Commonwealth, and in all educational institutions supported wholly or in part by money from the Commonwealth.* It is suggested that in giving instructions from this work the pupils be arranged in two grades. Let those who are in the primary grade, after reaching Part Fourth, be excused from further study, except in the chapters on "Narcotics" and "Opium."

All pupils who have reached the age of ten or twelve years will be able to complete the full work each winter. Permit the writer, as a teacher, to suggest that it is better, especially in a new subject, to assign *short* and easy lessons than to risk discouraging your pupils by giving them more work to perform than they can master with pleasure, or accept with profit to themselves.

THE AUTHOR.

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* It will be seen from the above, that this work was prepared while the writer was occupying the chair of Natural Sciences in the York Collegiate Institute, more especially for use in the schools of Pennsylvania, but as the desire for instruction on this subject is becoming quite general, it is hoped that the truths herein expressed may find favor with educators in other States.

PART FIRST.

The Structure of the Body.

FIRST LESSONS

IN

PHYSIOLOGY AND HYGIENE.

I.—KINDS OF LIFE.

1. Of what does Physiology treat?

   Of the action of the various parts of living bodies.

2. What are the living bodies?

   Those which pass through a course of life and growth.

3. How are the living bodies divided?

   Into plants and animals.

4. What are plants?

   The kinds of life which spring up from the ground. They remain fastened to the earth and can neither see nor hear.

5. Give some examples of plants.

   Grass, flowers, wheat, corn and trees.

6. What are the main parts of a plant?

   The top, or branches, the stem and the root.

7. Do plants live only on the land?

   They live both on the land and in the water.

8. What must plants have in order to live?

   Earth, air, sunshine and water.

9. What are animals?

The kinds of life which, as a rule, move about on the earth and in the water, and the larger animals both see and hear, while man, who is also an animal, can speak.

10. Give some examples of animal life.

Birds, dogs, sheep, horses and men.

11. What are the principal parts of such animals as those named?

The head, heart, stomach and feet.

12. Of what does the physiology, which is used in our schools, tell us?

Of the action of the parts of the human body.

13. What is the name of the book which describes the plant life?

It is called Botany.

II.—DIVISIONS OF THE BODY.

1. What is a division of a body?

One of its parts.

2. What is a great division?

A large portion made up of smaller parts.

3. How many great divisions are there in the human body?

Three.

4. What are they?

The head, trunk and extremities.

5. What are the names of the principal parts of the head which may be seen?

(1) The crown, (2) forehead, (3) back of the head, (4) temples, (5) eyes (6) nose, (7) mouth, (8) chin, (9) cheeks, and (10) ears.

6. What is the trunk?

The part from the head to the hips, not counting the arms.

7. What are the names of its parts?

The upper part is called the chest, and the lower part the abdomen (ab-dō-men).

8. Has the chest within it one or more than one organ?*

It has two principal organs.

9. What are they?

The heart and lungs.

10. How many principal parts are there in the abdomen?

Five.

11. What are they?

The stomach, liver, spleen, kidneys and intestines?

12. What are the extremities?

The arms and legs, with the hands and feet.

13. Of what kinds of material is the body composed?

Of solid, partly solid, and liquid substances.

14. What are the solid substances?

The bones and teeth.

15. What are the partly solid substances?

The flesh and internal parts of the body.

16. What are the liquid substances?

Water, blood, and other fluids.

* An organ is a separate part.

QUESTIONS.

1. Of what does Physiology treat?
2. What are living bodies?
3. What are the two great divisions of life?
4. What is a plant?
5. Can you name four kinds of plants not given in the book?
6. What is an animal?
7. Can each one in the class name a different kind of animal?
8. Is man a plant or an animal? Why?
9. What are the three great divisions of the body?
10. Can you tell the names of the different parts of the head?
11. Is the heart in the chest or abdomen?
12. Where is the stomach?
13. What are the extremities?

III.—THE SKELETON.

1. How many bones are there in the human body?

   Two hundred and six, not counting the teeth.

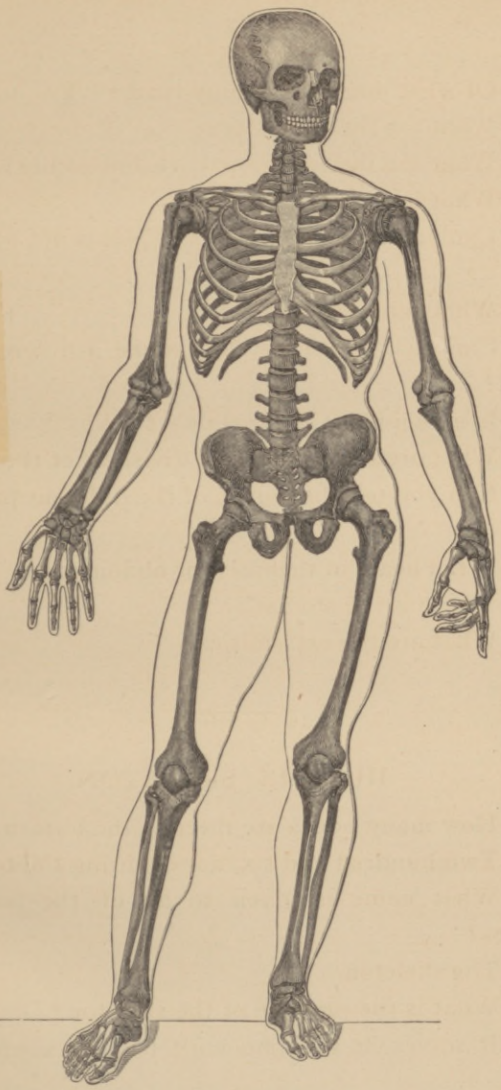
2. What name is given to all of the bones taken together?

   The skeleton.

3. What is the purpose of the skeleton?

   It serves as a frame-work for the support of the body?

4. Of what are the bones composed?



The Skeleton.

They are made up of about one-third part of animal and two-thirds mineral substances.

5. What is the name of the mineral which forms the principal part of the bone?

Lime.

6. Are the bones hard or soft?

In childhood they are soft, but in old age they become hard and brittle.

7. What is a brittle substance?

One which breaks easily, as a tumbler, or a dish.

8. When bones are broken how do they grow together?

A thick fluid, like mucilage, forms all around the broken parts and gradually changes to new bone.

9. If the bones of a child and those of an aged person were to be broken at the same time which would grow together first?

Those of the child.

10. Why?

Because the bones of a child, being softer, unite sooner than those of an aged person, which, as has been said, are hard, dry, and brittle.

11. When the bone is broken how long does it require for the parts to unite and become strong again?

From six to twelve weeks.

IV.—NUMBER OF BONES—THE TEETH.

1. How many bones are there in the head?

Twenty-eight.

2. How many in the trunk?

Fifty-four.

3. How many in the extremities?

One hundred and twenty-four.

4. How many teeth are there?

Children under eight years of age have only twenty, known as the milk-teeth, while grown persons have thirty-two.

5. Are the teeth counted as bones?

They are not.

6. Of what are the teeth composed?

Of almost the same material as bone, except that the parts which we see are covered with a layer of a white substance, called enamel.

7. Is a tooth harder or softer than bone?

It is much harder, and where the enamel is, it is almost like flint, which is one of the hardest kinds of stone.

8. What are the teeth shaped like?

Those in the front part of the mouth are shaped like wedges, and are called the cutters, while the back-teeth are large and flat, and are called the grinders.

9. How may the bones of the head be divided?

Into those of the skull, face and ears.

10. How many are there in the skull?

Eight.

11. How many in the face?

Fourteen.

12. How many in the ears?

Three in each.

13. Which of the bones of the head are easy to remember?*

The frontal (or forehead), the nasal bone (in the nose), the cheek and jaw bones.

QUESTIONS.

1. How many bones are there in the body?†
2. What is the skeleton?
3. Of what are the bones composed?
4. Which are more brittle, the bones of children or those of old people?
5. How long does it require for bones to grow together after being broken?
6. How many bones are there in the head?
7. How many in the trunk?
8. How many in the extremities?
9. Are the teeth counted as bones?
10. How many teeth should a person have who is five years of age?
11. How many should a grown person have?
12. Is the skull in the upper or lower part of the head?
13. How many bones are there in the skull?
14. How many bones are there in the ear?
15. Are the jaw bones in the face or skull?

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* The teacher will find it of great interest and advantage to have the pupils place their hands upon each bone as it is named.

† Some writers think there are 208 distinct bones.

V.—THE BONES OF THE TRUNK AND ARMS.

1. What are the principal bones of the trunk?

The backbone, breast-bone, ribs, and hip bones.

2. What is the backbone like?

It is called one bone, but it is made of small parts.

3. How many parts are there?

Twenty-six.

4. What are the parts called?

The vertebræ.

5. By what other name is the backbone known?

The spinal column.

6. Describe the breast bone.

It is a flat bone in the centre of the breast?

7. What are the ribs?

Twenty-four curved bones, twelve on each side, which extend from the backbone around to the front of the chest.

8. How are they held in front?

Seven on each side are fastened to the breast-bone, and are called true ribs; while the others, which are called floating and false ribs, are held together by a tough substance, called gristle.

The spine: the seven vertebræ of the neck, cervical; the twelve of the back, dorsal; the five of the loins, lumbar.

9. How many bones are there in the arm?

Thirty-two in each one.

10. How is the arm named?

From the neck to the elbow is called the upper arm, from the elbow to the wrist, the fore-arm, and from the wrist it is called the hand.

11. What are the parts of the upper arm?

The collar-bone, which may be felt below the neck, the shoulder-blade, which is between the collar-bone and the shoulder, and the humerus, which is the long bone between the shoulder and elbow.

12. How many parts are there in the fore-arm?

Two, the radius and ulna.

13. How can you tell the radius from the ulna?

When the arm is extended at full length, the upper bone is the radius.

14. Is it possible to feel both bones?

Yes, by pressing the arm above the wrist.

15. How many bones are there in the hand?

Twenty-seven.

16. How are they divided?

There are eight in the wrist, five in the palm of the hand, and fourteen in the fingers.

17. What are the bones in the wrist called?

The carpal bones.

18. What name is given to those in the palm of the hand?

The metacarpal bones.

19. What are the finger bones called?

The phalanges

20. How many bones are there in the fingers?

There are three bones in each finger, but the thumbs have only two instead of three.

VI.—THE BONES OF THE LEGS.

1. How many bones are there in each leg?

Thirty.

2. How many large parts are there in the leg?

Three, the thigh, lower leg and foot.

3. Where is the thigh?

The part between the trunk and knee.

4. What is the lower leg?

The part from the knee to the ankle.

5. What is the foot?

The part below the ankle.

6. How many bones are there in the thigh?

One, the femur or thigh bone.

7. How many bones are there in the lower leg?

Three, one in the front of the knee, called the patella or knee-pan, and two below it.

8. What are the names of the two below the knee-pan?

The tibia or shin bone, and the fibula or small bone.

The thigh-bone (femur) sawed lengthwise.

9. How many bones are there in the ankle
Seven.

10. How many between the ankle and toes
Five.

11. How many in the toes?
Fourteen.

12. What are the bones in the ankle called?
The tarsal bones.

13. What name is given to the five bones between the ankle and toes?
The metatarsal bones.

14. What are the bones in the toes called?
The phalanges.

QUESTIONS.

1. What are the principal bones of the trunk?
2. What are the parts of the backbone called?
3. Can you describe the ribs?
4. Are the floating ribs above or below the other ribs?
5. How many bones are there in the arm?
6. Can you name the parts of the arm?
7. Is the radius above or below the elbow?
8. How can you find the ulna?
9. How many bones are there in the hand?
10. What are the phalanges?
11. Do you know whether there are more bones in the arms or legs? How many?
12. Which part of the leg is called the thigh?
13. What is the knee-pan?

14. Are there the same number of bones in each toe?

No, the big toes have only two bones, while the others have three.

VII.—DIFFERENT KINDS OF BONES.

1. How are the bones arranged as to their shape?

In four groups.

2. What are the names of the four groups?

Long, small, flat and irregular bones.

3. Which are the long bones?

The ribs and the longest of the bones in the arms and legs.

4. Are the bones of the arms and legs solid or hollow?

They are hollow, but have inside of them an oily wax-like substance called marrow.

5. Why should not the bones be solid instead of hollow?

It is thought that if the bones were solid they would be entirely too heavy for the body.

6. Where are the small bones?

The principal ones are the bones which form the spinal column, the knee-pans, and the small bones in the wrists and ankles.

7. Are the bones of the spinal column solid or hollow?*

They are hollow, and contain a line of marrow called the spinal cord, which extends through the bones of the neck to the brain.

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* Each part of the backbone is almost solid, the part through which the spinal column passes is simply an opening through the bone.

8. Give some examples of the flat bones?

Several of them unite to form the upper part of the skull, while the shoulder-blades and the breast-bone belong to the same class.

9. What are the irregular bones?

Those which are of different shapes.

10. Where are they found?

Almost all are in the head.

VIII.—THE FLESH—THE SKIN.

1. Of what are the partly solid portions of the body composed?

Of flesh and other soft substances.

2. What are the divisions of the flesh and other substances?

The skin upon the surface of the body, the muscles, tendons and internal organs.

3. What is the color of the skin?

It varies from white to yellow, brown, red and black.

4. Why is this?

We do not know, but it is thought that, probably, the climate in the different parts of the world affects the color of the skin.

5. Do men have the same kind of bones, flesh and blood, all over the world?

Yes, the inner parts of man are almost the same throughout the world.

6. What is the skin like?

It is formed of two layers, and is full of small blood vessels and tiny openings.

7. How do we know that the skin is formed of two layers?

We know it from the fact that when it is burned slightly the outer layer rises, and a liquid gathers between it and the inner one, forming a blister.

8. What name is given to the outer layer?

The cuticle or scarf skin.

9. What is the name of the inner layer?

The cutis or true skin.

10. How is it known that the skin contains small blood vessels?

When it is cut deep enough to reach the true skin it bleeds.

11. How is it known that the skin is full of tiny pores?

When a man works until he becomes heated, a liquid escapes through the pores, and the surface of the body becomes moist.

12. What is the name of the liquid which passes out in this way?

It is called sweat or perspiration.

13. When a man sweats what is the effect upon him?

He becomes cooler.

14. If a poison were to be rubbed on a man's arm what would be the effect?

It would enter the body through the tiny pores and injure the man.

QUESTIONS.

1. How many groups of bones are there?
2. Give the name of each.
3. Can you find three long bones in your arm?
4. What do the bones have inside of them?
5. What is the brain?
6. What is the spinal column?
7. What shape is the knee-pan?
8. How do we know that the skin has openings in it?
9. How do we know that there are two layers?
10. Which is the true skin, the outer or the inner layer?
11. When a boy sweats does it make him hotter or cooler?

IX.—THE HAIR AND NAILS.

1. What is found upon the surface of the body?

   A growth of fine hair.

2. Are all parts of the body equally covered with hair?

   No, the head has more upon it than any other part.

3. What is the color of the hair?

   It is of different colors, from a very light to a coal black.

4. What is it that gives color to the hair?

   A kind of coloring matter, a portion of which is around the root of each hair.

5. Why is it that the hair becomes gray as people advance in life?

   After middle life, and sometimes earlier, the coloring matter gradually dies and the hair becomes colorless, or white.

6. Do any classes of the human race have hair of the same color?

Yes, the Indians have long, straight, black hair, while that of the Africans, which is also black, is short and curly.

7. What is the nature of the hair?

A, *a perspiratory tube with its gland;* B, *a hair with a muscle and two oil-glands;* C, *cuticle;* D, *papillæ; and* E, *fat-cells.*

Each hair seems to be solid, but it is hollow, like a tube, and has a tiny opening in the centre of it, all the way from one end to the other.

8. How does the hair grow?

It grows from the cuticle. At the root of each hair there is a tiny sac or vessel, from which the hair draws nourishment, like a plant growing from the ground.

9. Does the body furnish any oil to the hair?

Yes, enough to keep it soft and in good condition.

10. Is it wise to allow hair-dressers to put oil on the head?

It is not. A great deal of the oil which they use is not only useless, but injures the scalp, so that the hair either falls out or the person becomes troubled with dandruff.

11. Why do persons sometimes lose their hair after being sick?

This usually occurs in the case of those who suffer severely from brain fever. The head becomes so heated that the moisture in the small sac at the root of each hair is burned out, and the hair dies and falls off, somewhat like the plants droop and perish during the hot, dry season.

12. What do we find upon the ends of the fingers and toes?

Nails, which look like bones.

13. Do the nails remain the same all the time, like the teeth and bones?

No, they are constantly growing and should be trimmed at least once a week.

14. When may pupils be said to be in mourning?

When their finger nails are black.

15. What do black finger nails show?

They show that the owners of them are careless, untidy persons.

X.—THE MUSCLES AND TENDONS.

1. What are muscles?

The parts of the body which form the lean meat.

2. When the muscle is divided what are the parts like?

It may be easily separated into strings, or fibres, and each fibre is formed of still smaller threads, called tissues.

3. What are the tendons like?

They are formed of hard, gristly matter, and connect the ends of the muscles with the bones.

4. What useful purposes do the muscles and tendons serve?

They give form to the figure, and by their use we are able to move the different parts of our bodies.

5. Are the muscles stiff and hard to work?

No, they are elastic, like rubber, and move easily.

6. How many muscles are there?

More than five hundred.

7. Are they all bound together?

They are not, there are special muscles for the head, breast-bone, stomach, arms, feet, and many other parts of the body.

8. Where are some of the muscles which may easily be felt?

On the arm between the shoulders and elbow, and on the legs between the knee and ankle.

9. Where may the tendons be found?

They may be felt within the elbows, at the wrists, under the knees, and back of the ankles.

10. What are the internal organs which are composed of partly solid material?

The brain, in the head; the heart and lungs, in the chest; and the stomach and other parts in the abdomen (ab-dō-men).

11. Are they at all like the muscles and tendons which form the outer part of the body?

They are softer and of different shapes, but in every case are made of flesh, which is composed of muscle and tissues.

12. What are the liquids in the body?

The Muscular System.

Water, blood and juices.

13. How much water is there in the system?

Almost three-fourths of the body is water.

14. Of what is the blood made?

Of water, coloring matter and fibrin.

15. What is fibrin?

It is the fibre part which is left when the blood dries.

16. What are the juices like?

Some contain sugar, and are sweet, others contain salts, and are sour.

XI.—THE JOINTS.

1. What are the names of the places where the bones meet?

They are called joints.

2. How many principal kinds are there?

Two, fixed and movable.

3. What are the fixed joints?

Those in which the bones are not free to move.

4. What examples may be given?

The flat bones of the skull are united so as to make one solid body.

5. What other example may be given?

There are five bones in the lower part of the spine, which, in childhood, are separated, but afterwards grow together, so as to form one bone.

6. What are movable joints?

Those in which the bones are free to move.

7. How many kinds are there?

There are two principal kinds, the hinge, and ball and socket joints.

8. What example may be given of the hinge joints?

At the elbows and knees the arms and legs move back and forth like hinges.

9. What is a ball and socket joint like?

One bone, which is round on the end, fits into another, which is hollow, like a tea-cup.

10. What example may be given of such joints?

The upper bones in the arms and legs are round on the ends and fit into sockets in the shoulder and thigh bones.

11. Does a ball and socket joint give the arm more or less chance to swing, than it has at the hinge joints?

It gives it a much better chance, for the arms may be whirled around in a circle.

12. How are the bones held in place at the joints, and why do they not scrape against one another when the body moves?

They are held in place by strong gristle or cartilage, which grows all over the ends, and they are supplied with a thick fluid, like the white of an egg, which keeps them smooth and oily.

General Review.

1. Of what does Physiology treat?

2. How can we tell the difference between a plant and an animal?

3. Is man a plant or an animal?

4. Is the stomach above or below the heart?

5. What is the name of the mineral which forms the greater part of the bone?

6. How many bones are there in the human body?

7. Are the bones of an aged person hard or soft?

8. Which will grow together first, the bones of a child or those of an older person? Why?

9. Are the teeth counted as bones?

10. What are the principal bones of the trunk?

11. What are the floating ribs?

12. How many bones are there on each side of the body?

13. Where is the shin-bone?

14. How many groups of bones are there?

15. What is marrow?

16. What are the parts of the backbone called?

17. Is the breast-bone flat or round?

18. What is the color of the skin?

19. If the skin were covered with poison would it injure the person? How?

20. What is fibre?

21. What is the difference between a muscle and a tendon?

22. Do the muscles form the fat or lean meat?

23. Of what are the internal parts of the body composed, hard or soft substances?

24. What are the liquids in the body?

25. Are the juices in the body sweet or sour?

26. What are the joints?

27. What is a hinge joint?
28. Can you find four hinge joints in your body?
29. What is the ball and socket joint like?
30. How are the bones held together at the joints?

PART SECOND.

HYGIENE.

PART SECOND.

XII.—HYGIENE.

1. Of what does Hygiene treat?

Of the laws which govern the health and growth of the human body.

2. What good rules may be laid down in order that the body may be kept strong and vigorous?

(*a*) It should be supplied with good food.

(*b*) It should be kept clean and properly clothed.

(*c*) There should be regular exercise.

(*d*) A person should take a season for rest after engaging in hard work.

(*e*) A man should have a great deal of fresh air.

3. What is good food?

That which when taken into the body will be easily changed into flesh and blood.

4. What should be known in order that we may select proper food?

We should know of what our bodies are made.

5. Of what are they composed?

Chemists have found that there are about sixteen different materials in the body.

6. What are the names of some of the most common among them?

Oxygen, hydrogen, carbon, nitrogen, iron, sodium, calcium, potassium and phosphorus.

7. How will this list help us to select proper food?

The first two of the substances, oxygen and hydrogen, unite to form water, which forms nearly three-fourths of the body; therefore we need good water.

8. What do the others form?

The first three, oxygen, hydrogen and carbon, are found in bread, sugar, potatoes and like food.

9. Of what is lean meat composed?

Of the first four materials, oxygen, hydrogen, carbon and nitrogen.

10. Where are the other materials found?

The calcium, carbon and oxygen make lime, which is found in the bones; the iron is in the blood; the sodium in the liver and stomach, and the phosphorus in the bones and brain.

11. How much water is there in the body of a man weighing 150 pounds?

About 107 pounds.

12. How may the food and drink which we use be divided?

Into two great classes.

(*a*) Necessary food.

(*b*) Luxurious food.

13. What is necessary food?

That which is required in order to sustain life.

14. What is luxurious food?

That which is not needed, but is taken simply to please the taste.

XIII.—KINDS OF FOOD.

1. How many kinds of food are needed to supply the *wants* of the body?

There should be three principal classes: (*a*) the albumens, (*b*) the sugar, or starch, (*c*) the fats, or oils.

2. What are the albumens like, and why are they used?

They are like the white of an egg (it is albumen) and they are needed to form flesh.

3. What are three kinds of such food which form flesh?

Eggs, lean meat and bread.

4. What are the sugar and starch bodies for?

They furnish heat to the body.

5. What four kinds of such food may be named!

All kinds of sugar, bread, milk and potatoes.

6. What is the purpose in eating oily or fat food?

It also supplies heat and furnishes fat for the system.

7. Name four kinds of oily food which we may easily procure.

Butter, cream, fat meat and corn meal.

8. What other kinds of food should be used?

Salt, pepper and spices, to give tone to the system.

9. What mistake do persons make in using salt, pepper, vinegar, pickles and like food?

They frequently use too much without knowing it.

10. If a person were to stop using salt would he have good health?

He would not; he would certainly die.

11. Should a person live on animal or vegetable food?

He should use both.

12. Why is it that during the summer people use so much vegetable food? Is it simply because vegetables grow then?

No; it is because flesh and fats make too much heat for the body.

13. Do men in the far north use more fat than we consume?

Yes; it is known that one Esquimaux will eat from three to five pounds of tallow at one meal.

14. Why does he do this?

Because, owing to the cold, the body needs an extra supply of oily food.

QUESTIONS.

1. Define Hygiene.
2. Can you give the five rules for the care of the body?
3. What is good food?
4. How many materials unite to form the body?
5. Give the names of six substances found in the body.
6. How much of the body is water?
7. Of which two substances is water composed?
8. Name the four elements in lean meat.
9. Where is the lime in the body?
10. Where is the phosphorus?
11. Name the three classes of food for the body.
12. Where do people use the most oily food? Why?

XIV.—FOOD AND DRINK. (CONTINUED.)

1. What are the most common liquids which man uses for food?

Water, milk, tea, coffee and cocoa.

2. Which are the most desirable?

Water and milk.

3. What mistake do men make in using water?

They frequently drink too much while eating.

4. What danger is there in using too much water while eating?

It causes pain in the stomach and prevents the digestion of the food.

5. In what other way do men injure themselves by drinking water.

By drinking too much when overheated.

6. How are they affected by this action?

In some cases a chill follows, in others death results.

7. Why is milk good for man?

Because it contains all that the system requires.

8. What advantage is there in using tea?

It acts as a gentle stimulant to refresh the body and soothe the nerves, while, at the same time, it lessens the desire for food.

9. What is the effect when coffee is used?

It excites the mind to a slight extent, but if too much be taken, it destroys sleep and renders a person nervous and fretful.

10. What is cocoa like?

It is a pleasant and wholesome drink which affords more nourishment than either tea or coffee.

11. Which articles of food are the best for the system?

In the following table, those in the first column are the most easily changed into flesh and blood; those in the second come next, and those in the third should not be used by the sick or persons in delicate health.

1.	2.	3.
Chicken.	Soup.	Sausages.
Beef-tea.	Eggs.	Hard Eggs.
Milk.	Oysters.	Cakes.
Fish.	Potatoes.	Custards.
Oranges.	Apples.	Cucumbers.
Grapes.	Bread.	Carrots.
Strawberries.	Cabbage.	Pickles.
Oatmeal.	Puddings.	Cheese.

12. What is the best food for a sick person?

Toast, with milk or eggs.

13. Why is toast better than bread?

When bread is toasted, a part of it, called dextrine, is changed so that it is digested more easily than before.

14. Should alcohol, tobacco or opium be used as food!

They should not, for they tend to destroy the body.

XV.—BATHING.

1. How should the body be kept clean?

By frequent baths.

2. How often should a bath be taken?

In cold weather, twice, and in warm weather, at least three times a week.

3. Why is it necessary to bathe so often?

Because the pores of the skin become covered with dried sweat and an oily liquid, and as the sweat cannot then escape, the man becomes feverish and sickly.

4. Which is better to bathe in, hot or cold water?

It is well to change, using hot water at one time and cold at another, or to use hot water first, and then follow with cooler water, in order to prevent a chill after the bath.

5. How does salt water affect the system?

It is better to bathe in salt than fresh water, because the salt in the water opens the pores more quickly and freshens the skin.

6. How long should persons remain in the water?

Only a few minutes at a time.

7. What risk is there in remaining a long time in the water?

A person in deep water, is liable to be seized with the cramp and be drowned before being rescued, while one near the shore may become so chilled as to be taken sick.

8. How may a person overcome, to some extent, the danger of being chilled while bathing?

By diving into the water as soon as he enters it, in order that all parts of the body may be covered at the same time.

9. What mistake do young swimmers make?

They try to swim too far and sink exhausted while in deep water. Many persons have lost their lives in this way.

QUESTIONS.

1. Name the liquids which are unwholesome for man.

2. Why should we not drink a great deal of water while eating?

3. What is the effect of drinking too much water when overheated?

4. Can you name four articles used for food or drink which are luxuries?

5. Name four articles of food which are easy to digest.

6. Name four kinds which are hard to digest.

7. Is tobacco a food?

8. How often should persons bathe in summer?

9. Why is it necessary to bathe so frequently?

10. Which is better, to bathe in cold or hot water?

11. Why are boys sometimes taken sick after swimming?

12. Can you think of any mistake which young swimmers make?

XVI.—CLOTHING.

1. How should the body be clothed?

In cold weather with good warm clothing, which should be changed gradually as the summer approaches.

2. What frequent mistakes do people make in respect to their clothing?

They lay aside their warm wraps and flannels at the first approach of spring simply because the sun shines.

3. What results follow?

Some suffer with severe colds while others are prostrated upon beds of sickness.

4. Is it wise to wrap the neck very closely in winter?

Dr. Carl Sieler, of the University of Pennsylvania, says that except when exposed to severe storms, the use of scarfs and warm comforters results in more harm than good.

5. Why is this?

It is thought that the neck, like the face, is able to bear more cold than other parts of the body, and that when kept warmly wrapped, it becomes weak and tender.

6. Can anything be done to prevent taking cold?

Yes; by washing the neck every morning with cold water, it becomes hardened and will bear exposure to severe storms without either cold or injury.

7. Is there any risk in remaining in school or church when the feet are wet?

Yes; wet clothing of every kind should be removed as soon as possible. It is better for a child to spend part of a day out of school than by remaining, to take the chance of an attack of fever.

XVII.—EXERCISE.

1. How should bodily exercise be taken?

Upon the principle that every part of the body should be in active use in order that it may become strong and useful.

2. If one arm were in daily use and the other were not, how would they differ in power?

The one would be strong, the other weak.

3. How is this known to be true?

It is known to be true from the fact that many of the heathen people of the old world have been found with weak and deformed limbs, because they were bound and left in one position for several months:

4. Why do they injure themselves in this manner?

They think that it pleases the idols which they worship.

5. Do the women also injure themselves?

Yes, in China the women bind the feet of the little girls, until they become too weak and feeble to walk.

6. How does the merchant, who takes but little exercise, compare with the farmer who is busy all the time?

The muscles of the merchant are soft and his arms are weak, while those of the farmer are hard and strong.

7. Who pays more money for medical care, the merchant or the farmer?

The merchant.

8. How should exercise be taken in order that it may prove of advantage to the body?

At the right time and in the right way.

9. What is the best time for exercise?

About two or three hours after a meal.

10. Why is this?

Because it requires some time after each meal for the food to digest, and while the change is taking place the body should be at rest.

11. What is the best kind of exercise to take?

That depends upon the state of each person; one with weak legs or feet should walk daily; another with weak arms should work in the garden, saw wood or row a boat; a third, with a weak back, should ride either on horseback or in a carriage, while anyone seriously troubled should consult a physician.

12. What should persons do who do not feel sick?

If possible, engage in good active work, which will both keep them strong and pay them for their labor.

13. What should persons who are going to school, or working in the house, do for exercise?

Walk as much as possible, go riding, play ball, work in the garden, or do anything which will give exercise in the open air.

14. If a person cannot exercise in the open air what should he do in the house?

Practice in a gymnasium.

15. What is a gymnasium?

A place where pupils take exercise under the care of a teacher, who shows them how to use every part of the body.

16. How long should a person exercise at one time?

If the exercise be violent, about half an hour is long enough, if mild, an hour will answer, although a student may continue for a longer time with advantage to himself.

17. How may a person know when to stop exercising?

He should stop as soon as he begins to feel just a little weary.

18. Are there any kinds of exercise which are injurious?

Yes. Rope jumping, dancing and roller-skating

19. Why are the last three especially injurious?

Because persons become so interested in them that they do not stop at the proper time for health, but take part until hardly able to walk, and hence fall sick as the result of thoughtlessness.

QUESTIONS.

1. How should the body be clothed?

2. What mistakes do persons make in regard to their clothing?

3. Why do so many persons catch cold in the spring season?

4. What does Dr. Carl Sieler say concerning the use of a comforter, or heavy scarf for the neck?

5. How may persons prevent the taking of a cold?

6. Is it safe to remain in school or church when the feet are wet? Why not?

7. How should exercise be taken?

8. What would be the effect upon an arm if it were tied to the side and left in that position for several months?

9. How do the Chinese women injure the feet of their little girls?

10. Who sends for physicians the more frequently, the farmer or the merchant?

11. Why should not a man take violent exercise just after a meal?

12. Can you name four kinds of healthful exercise?

13. Can you name four kinds of exercise which tend to result in injury?

14. What is a gymnasium?

15. Do you know of any children who have been injured by rope jumping?

XVIII.—WORK—REST.

1. How much time out of the twenty-four hours in each day, should a person devote to work.

About eight hours.

2. How long should he rest?

Eight hours should be used for eating, resting and very light work.

3. What should be done with the remaining eight hours.

They should be passed in sleep.

4. Do not some men work now from ten to fifteen hours a day?

Yes, but it is not wise to do so, a man will live longer and do better work by not doing too much at one time.

5. What is the advantage of taking eight hours for sleep?

During sleep our bodies are rebuilt and strengthened for future labor, therefore, by allowing full time for sleep, we remain stronger than we would be if we were to shorten the time of complete rest.

6. What is the best plan for students and others engaged in literary work?

To follow the plan now pursued at the agricultural institutions and some of our colleges.

7. What is this plan?

To spend a portion of the day in study and the remainder in some exercise which may be of lasting benefit.

8. How much of the time do they devote to study?

About six hours daily and from three to four hours in outdoor exercise.

9. Why is the exercise, taken at such an institution of more benefit than walking, riding, rowing and other sports usually followed while at school?

Because the average scholar when he leaves school has nothing except health to show for his years of outdoor sport, while the young men from the industrial institutions have education, health and a knowledge of how to raise berries, make lawns, manufacture tools, cultivate fruits and do many other things which will be of great value to them in after life.

XIX.—VENTILATION.

1. Do the houses in which we live and the public halls in which we meet with others contain pure air?

They do not.

2. Why is this?

Because we are all the time throwing off impure air and gases from our lungs, which, with the heat and other gases from stoves and furnaces, render the rooms close and unhealthful.

3. What are the names of the gases which render the air so unhealthful?

There are two principal kinds called carbonic acid and carbonic oxide.

4. How are they produced?

The first is thrown off from the lungs and both are formed when anything like wood or coal is burned with fire.

5. How does the air in a room which contains either of these gases affect persons?

It makes them cough and causes the headache.

6. What common mistake do people make in their houses?

They sleep in small rooms with both the doors and windows closed.

7. Why is this a mistake?

Because each person renders ten cubic feet of air impure in a minute, and as, usually, there are two persons in one room, the bad air soon affects the sleepers, so that they do not rest well, but toss about and have troubled dreams.

8. What is the size of an ordinary bedroom?

About twelve feet long, ten feet wide and ten feet high.

9. How long should it be before so much impure air would be thrown off from the lungs of two sleepers, in such a sized room, as to render the air unfit to breathe?

Not more than one hour.

10. How may a supply of pure air be obtained?

By raising the windows a little at the bottom and lowering them about the same space from the top.

11. Why is this a good plan of ventilation?

Because in such a case the warm and foul air would escape at the top of the window, while fresh air would enter at the bottom.

12. Should the windows be open on both sides of the room at the same time?

They should not; as, in that case, a current of air would pass through the room and might cause the sleepers to take cold.

13. In what other way may a room be ventilated?

If it contains a fire-place, the best plan is to leave the fire-board partly open.

14. How should teachers ventilate school rooms?

By having some of the windows thrown wide open for a few minutes at each recess.

15. How should churches and public halls be supplied with fresh air?

About an hour before the time for meeting the windows should be raised for fifteen minutes, then closed entirely on one side and almost so on the other, leaving only a small space open at the top of each one.

16. Why should the windows in a public building be opened an hour before the time of meeting?

In order that the fresh air may be somewhat warmed before the people arrive.

17. At what rate would an audience of two hundred persons render the air of a church or hall impure?

Two hundred would render the air impure at the rate of two thousand cubic feet per minute.

18. What effect does this change in the air have upon the people?

It always follows, unless the hall is well ventilated, that when the audience is large a number of the ladies feel weak and faint until they return to the open air.

19. Are our school buildings and public halls properly ventilated?

They are not; as a general rule they are sadly neglected.

General Review.

1. What is Hygiene?
2. Give three good rules for the care of the human body.
3. How many materials are there in the body?
   Sixteen.
4. Name eight of them.
5. How much of the body is water?
6. Can you name the three classes of necessary food.
7. Could persons live upon milk alone?
8. Why do we need sugar?
9. Name four kinds of food which contain starch.
10. Is fat meat used chiefly in the North or South? Why?
11. Could a man live without salt?
12. Name three liquors which are used as food.
13. When will ice water injure a person?
14. If a person were to drink two or three cups of strong coffee at night, would it keep him awake or cause him to feel drowsy?

15. Can you name six kinds of food which are used as luxuries.

16. Name four kinds of food which are easy to digest.

17. Name four kinds which are hard to digest.

18. Is alcohol a food?

19. Why should persons bathe from two to three times per week?

20. How long should persons remain in the water?

21. What advantage is there in diving into the water as soon as you enter it?

22. What mistake do people make about changing their clothing?

23. What does Dr. Sieler say about wrapping the neck?

24. What caution has been given about wet feet?

25. How do the people in India injure their arms?

26. Who is stronger, a merchant or farmer? Why?

27. What is the best kind of exercise for a person with weak arms?

28. What is taught in a gymnasium?

29. Which are the most injurious kinds of exercise? y?

30. How long should a person sleep?

31. Do our houses contain pure air?

32. What are the names of two gases which render the air impure?

33. Which one of the gases is thrown off from the lungs?

34. Do people usually have enough fresh air in their bedrooms?

35. How should a bedroom be ventilated?

36. Why should not the windows of a bedroom be opened on both sides of the room at the same time?

37. How should school houses be ventilated?

38. How should a church or public hall be supplied with fresh air?

39. Why do ladies often feel faint and sick in public halls?

40. How much air would two hundred persons render impure in one minute.

41. Are our lecture-rooms and churches, as a rule, well ventilated?

PART THIRD.

Alcoholic Stimulants and their Effects

ON THE

INTERNAL ORGANS.

PART THIRD.

XX.—ALCOHOLIC STIMULANTS.

1. What are stimulants?

Substances which when taken into the system produce unusual action and excitement in one or more of its parts.

2. What are narcotics?

Substances which when taken in small doses soothe the body and cause sleep, but in large doses produce stupor or death.

3. What do we mean by alcoholic stimulants?

All kinds of fermented drinks.

4. What are the names of such drinks?

Wines, beers, ales and the stronger liquors.

5. What are the stronger liquors?

Rum, gin, brandy and whiskey.

6. What is there in these liquors which produces the excitement in the system?

A chemical agent called alcohol which is found in every one.

7. What is the origin of the name alcohol?

It comes from alkohl, a fine powder, used long ago by young girls in Asia; they painted their eyebrows with it in order to appear more beautiful.*

8. By what other name is alcohol known?

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* The name alcohol was probably given to the liquid because it causes the face to flush and change color.

As spirit of wine.

9. Why is it called the spirit of wine?

Because it is formed during the fermentation of liquids which contain sugar.

10. What is meant by the fermentation of liquids?

When they are left in any warm place the sugar in them is changed into carbonic acid and alcohol.

11. What examples of fermentation may be given?

The making of cider. When it is first made it is mild and sweet, but in a short time it becomes too strong to use.

12. Why is it too strong for use?

Because it is like vinegar, and even one glass of it will either excite or sicken a child.

13. May not cider be kept sweet?

It may, for a short time.

14. Is it injurious while sweet?

It is not; it may be taken as freely as milk or water.

XXI.—ALCOHOL.

1. What is alcohol like?

When pure it is a liquid which looks like water, but is somewhat lighter.

2. How does it differ from water?

Water is harmless, while pure alcohol is a poison which, if taken into the system in large quantities, will cause death.

3. How much pure alcohol would it take to cause death?

"It is probable that from two to six ounces would destroy life." (Talyor.)

4. In what other respects may alcohol be described?

It burns well, producing a great deal of heat with but little light.

5. Are alcohol lamps in general use?

They are used chiefly by chemists and jewelers.

6. Are there any other uses for alcohol?

Yes; it is used largely for dissolving resin and other gums. Varnish is made in this way.

7. What is known of alcohol as a medicine?

It was used formerly more than at present, but is still considered to be a valuable medicine. It should never be used except by the advice of a physician.

QUESTIONS.

1. What are stimulants?
2. What are narcotics?
3. Can you name four kinds of alcoholic stimulants?
4. Can you name four strong liquors?
5. What is the origin of the name alcohol?
6. What is meant by the fermentation of liquids?
7. What is hard cider?
8. Why is it not right to use such cider?
9. Is sweet cider injurious?
10. Can you describe alcohol and tell some of its uses?
11. How much pure alcohol would it take to cause death?
12. When should alcohol be used as a medicine?

XXII.—WINES.

1. What is wine?

A drink made by the natural fermentation of the juice of fruits.

2. What are the names of the wines in general use?

Cider, perry, grape, port, sherry and champagne.

3. From what are they made?

Cider from apples, perry from pears, and the others from grapes.

4. How do they vary in color?

From the light brown of the cider to the almost black of the port.

5. How do they differ in taste?

Some are mild, while others are strong and bitter.

6. How do they differ in strength?

The strength of each depends upon the amount of alcohol it contains.

7. How much alcohol do cider and perry contain?

They each contain about eight per cent.

8. How strong are the grape wines?

They contain from ten to twenty per cent. of pure alcohol.

9. What does it mean when we say that the grape wines contain from ten to twenty per cent. of pure alcohol?

It means that in one hundred glassfuls of wine there are from ten to twenty glassfuls of pure alcohol.

10. Upon what does the taste of wine depend?

Upon the fruit from which it is made and the amount of sugar it contains.

11. Is the taste of wine agreeable?

It is not; children do not like it.

12. How does wine affect the system?

When taken for the first time even a small quantity will cause the face to become flushed, the hands to tremble, the heart to beat faster, and excite the mind.

13. Is the body made stronger or weaker by the use of wine?

In a few cases the body may become stronger by its use, but in general it produces far more harm than good.

14. What danger is there in its use?

By the gradual use of it a taste is acquired which it is almost impossible to control.

15. What is the effect of this acquired taste?

It requires a greater amount of wine to satisfy the unnatural appetite which the taste develops.

16. What is the effect of taking the increased quantity of wine?

It excites the mind of the person to such an extent that he becomes intoxicated, disgraces himself, and frequently inflicts injuries on others.

17. Why then do men use wine?

They commence its use thoughtlessly and find, when too late, that "Wine is a mocker, strong drink is raging: and whosoever is deceived thereby is not wise."

QUESTIONS.

1. What is wine?
2. Can you name four kinds of wine?

3. Upon what does the strength of wine depend?

4. How much alcohol is there in cider?

5. What do we mean when we say that grape wine contains from ten to twenty per cent. of alcohol?

6. Do children like wine?

7. What danger is there in the use of wine?

8. How does wine affect a person?

9. Why do men use it?

XXIII.—FERMENTED LIQUORS. (CONTINUED.)

1. What is beer?

A malted liquor made chiefly from grain.

2. What is meant by a malted liquor?

A drink made from the malt of grain.

3. How is the malt made?

The grain is soaked in water, then gently warmed, which causes it to sprout. After growing for the space of from ten days to two weeks it is heated so much that its growth is checked, when it is called malt.

4. What is then done with the malt in order to change it into beer?

It is first sifted, in order to separate the roots, then the grain is crushed and warm water is added, which dissolves out all the sugar, starch, and real strength of the young plant.

5. What is next done?

To the solution, containing sugar, starch and other substances from the grain, is then added some yeast made

from hops, which causes the liquid to ferment, when it is called beer.

6. How does the liquid change when it ferments?

Instead of remaining mild and sweet it becomes strong and bitter: this is caused by the starch and sugar being changed into carbonic acid and alcohol.

7. How much alcohol does the beer contain?

From five to eight per cent.

8. When beer is poured out of a bottle why does it foam, so as to flow over the top of the glass?

The foam is the carbonic acid which is formed when the sugar part is changed to alcohol.

9. What is ale?

It is a kind of beer.

10. To what extent is beer used?

It is in general use throughout the United States and Europe.

11. Is it a mild or strong drink?

It is a mild drink.

12. Is the use of beer, as a beverage, harmless or injurious?

It is injurious.

13. Why is this?

It is injurious first, because the use of it leads to strong drink; second, because men use it to excess, and third, on account of the alcohol it contains.

14. How does the use of beer lead to that of strong drink?

Almost all of the persons who now use whiskey and brandy commenced when young by learning to drink wine and beer.

15. What proof is there that beer is used to excess?

There are men in every town who boast that they can drink from ten to twenty glassfuls of it in one day.

16. Are they able to do this?

In some cases they are, but in so doing they both injure and disgrace themselves.

17. What is there in beer to injure a man?

The alcohol which it contains.

18. If a man were to drink from ten to twenty glasses of beer in one day how much alcohol would be consumed?

From one to two glassfuls of the pure alcohol, or more than he would get in taking two or three drinks of brandy.

19. Do men become drunk from the use of beer?

Yes; every day of the year.

20. Is beer necessary for the human body?

It is not.

XXIV.—STRONG DRINKS.

1. What are strong drinks?

Liquors which contain a great deal of alcohol.

2. How do they differ in action from the mild drinks?

They produce excitement and intoxication in a much shorter time.

3. What does the word intoxication mean?

In scientific and medical language it means, in a poisoned state.

4. What are the most common kinds of strong drink?

Rum, gin, whiskey and brandy.

5. By what general term are they known?

As distilled liquors.

6. How is liquor distilled?

Any fermented liquid, such as wine, is heated until it is converted into vapor, then the vapor is cooled until it changes back into the liquid state, when it is found that the new liquor contains more alcohol in proportion to the water than at first.

7. How much alcohol do the strong liquors contain?

From fifty to sixty per cent., or more than one-half.

8. From what is brandy made?

From the fermented wines of apples, peaches, currants, blackberries, and other fruits.

9. From what is whiskey made?

From grain; especially corn, rye and barley.

10. From what is gin made?

From grain, with the addition of juniper berries and hops.

11. From what is rum made?

From sour molasses.

12. Have the strong drinks an agreeable taste?

They have not, for quite young persons cannot bear to drink them.

13. How then have they come into such general use?

The men who now use strong drink began when young to use the milder liquors, and continued until an unnatural appetite compelled them to use rum, whiskey and brandy.

QUESTIONS.

1. Can you tell how beer is made?
2. What is the malt?
3. What is yeast?
4. Is beer sweet or bitter?
5. How much alcohol does it contain?
6. Why does the beer foam when it is poured into a glass?
7. What proof is there that beer is used to excess?
8. Will beer make a man drunk?
9. What are strong drinks?
10. What does intoxication mean?
11. Can you name three strong drinks?
12. How is liquor distilled?
13. How much alcohol do the strong liquors contain?
14. From what is whiskey made?
15. From what is rum made?
16. Do young persons like the strong liquors?
17. Why do men use such strong drinks?

XXV.—PHYSIOLOGICAL EFFECTS OF ALCOHOLIC STIMULANTS.

1. What are we to understand by the physiological effects of alcohol?

The effects produced upon the human body by its use.

2. What are some of the effects which are visible to the eye?

The person who is under the influence of alcohol appears to be confused and giddy, is scarcely able to stand, walks with a tottering gait, and finally drops down unconscious, which state, when consciousness is restored, is followed by sickness of the stomach, which causes vomiting.

3. Are there any other indications of the use of alcohol which may be readily detected?

The face is flushed, the pupils of the eyes dilated, the hands tremble, and the person is unable to speak calmly, but talks in an excited and broken manner.

4. Is a man, while under the influence of alcohol, stronger or weaker than without it?

When first taken it imparts an artificial strength, which is soon followed by a period of unusual weakness.

5. Are the internal organs of man affected by the use of alcohol?

They are.

6. What parts are affected the most?

The stomach, heart, liver, kidneys, lungs and brain.

7. Are they improved or injured by the use of liquor?

In special cases they may be improved, but in general they are greatly injured.

8. Are they injured by the constant or special use of alcohol?

By the constant use.

9. When may alcohol be used to advantage?

When a person, from weakness or injury, loses consciousness or the blood becomes congested.

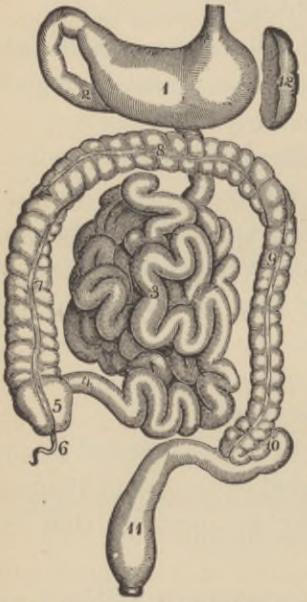
10. How will alcohol help a man in such a case?

It increases the circulation of the blood, which tends to restore the body to its natural state.

11. How should alcohol be taken in such cases?

Always by the advice of the physician, and only according to his directions.

XXVI.—THE STOMACH.



The stomach and intestines. 1, *stomach;* 3, *small intestine;* 7, 8, 9, 10, *large intestine.*

1. Describe the stomach.

It is a sack-like body, in the upper part of the abdomen, which receives the food from the mouth.

2. Through which body does the food pass from the mouth to the stomach?

Through the gullet or esophagus.

3. What are the walls of the stomach like

They are porous and filled with minute blood vessels. The inner surface is covered with a formation called the mucous membrane.

4. What is the size of the stomach?

It is large enough to hold from three to four pints of liquid food.

5. What is the duty of the stomach?

To digest the food.

6. How does the digestion take place?

The food while in the mouth is somewhat softened and changed by the saliva which there acts upon it, and as soon as it enters the stomach, a fluid called the gastric juice, flows in upon it from the mucous membrane. The gastric juice contains a sour substance called pepsin, which acts upon the food very rapidly. This pepsin, with the saliva from the mouth and the heat of the stomach, acts upon the food until it is changed into a semi-fluid gruel-like mass.

7. What is it then called?

Chyme (kīm).

8. What further action then takes place?

As soon as the food begins to dissolve, a very considerable portion passes into the walls of the stomach, and is there absorbed by the blood vessels with which it comes into contact, and through them it enters into the circulation of the blood.

9. What becomes of the portion of the food which does not enter the blood by absorption through the walls of the stomach?

It leaves the stomach by an opening called the pylorus, or gate-keeper, and enters the intestines, where it is acted upon by the pancreatic juice, intestinal juice, and other liquids, that it may be further digested.

10. How does alcohol affect digestion?

When the stomach is weak, as from fever, and unable to fully perform its duties, the use of a small quantity of alcohol stimulates it, causing an increased flow of gastric juice, and thus is an important help to digestion.

11. In what state is alcohol thus given to aid digestion?

As a mild wine.

12. How does the continued use of wine affect the digestion?

It is very injurious.

13. In what way?

It produces such an abundant supply of gastric juice as to weaken the system, causes the blood vessels to become inflamed and swollen, and produces partial paralysis of the tissues of the stomach.

14. What is the opinion of medical men concerning alcohol as a food!

They agree that even though it be a food, it is an exceedingly dangerous one.

15. Could not wholesome food be given in place of wine, when the stomach is weak and feeble?

Yes; with better results in many cases.

16. What danger is there in prescribing the use of wine?

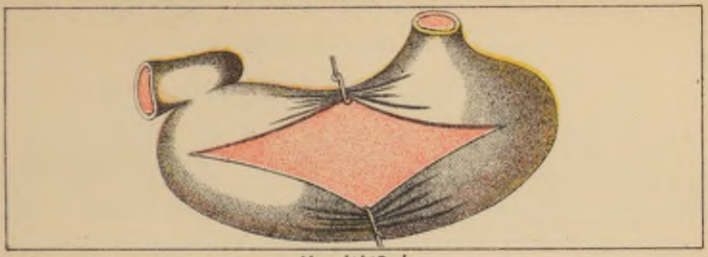
The great danger is that the person will acquire an appetite for it which will tend to its constant use, with injury to himself, as we have just seen, and end in the use of strong drink.

17. What are the effects of the use of strong drinks, such as rum, whiskey and brandy upon the stomach.

When taken by persons unaccustomed to their use, they in some cases produce violent sickness accompanied by spasms; in others the partial or total paralysis of the stomach.

18. How is the stomach affected by the regular use of the strong liquors?

EFFECTS OF ALCOHOL UPON THE STOMACH.

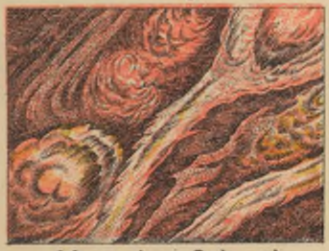


Healthful.

Moderate Drinking.

Drunkards.

Ulcerous.



After a long Debauch

Death by Delirium Tremens.

The Cancerous Stomach.

By the continued use of strong drinks the secretion of the gastric juice is impaired, and the food, from the want of sufficient gastric juice, does not digest, but turns sour, which causes vomiting, and often results in dyspepsia.

19. Do any other changes take place?

Yes; the blood vessels with which the walls of the stomach are filled become enlarged and finally burst, producing sores with general inflammation of the stomach.

20. How are the sores affected by the still further use of strong liquors?

They grow worse and form ulcers which feed upon the system until death results.

21. Why then do men use such a self-destroying substance as alcohol?

They commence its use thoughtlessly, and find, when too late, that they are unable to resist its poisonous effects.

QUESTIONS.

1. What do we understand by the physiological effects of alcohol?

2. Describe the appearance of a man under the influence of alcohol?

3. Does liquor make a man stronger or weaker?

4. Can you name the internal organs which are most affected by the use of alcoholic stimulants?

5. When may alcohol be used to advantage?

6. How should it be taken?

7. What is the stomach like?

8. What is meant by the digestion of food?

9. How does digestion take place?

10. Why is mild wine sometimes given to persons?

11. How does the constant use of wine injure the digestion?

12. What is the opinion of medical men concerning wine as a food?

13. What are the dangers which attend the use of wine?

14. What are the effects produced by strong drink?

15. What is the difference between the effects of mild and strong drink upon the stomach?

16. Explain how the ulcers are formed.

XXVII.—THE LIVER—CHANGES PRODUCED BY ALCOHOL.

1. Where is the liver and what is its office?

It is in the abdomen, next to the stomach and receives the blood which passes from that body.

2. What happens to the blood when it reaches the liver?

It is changed into two substances, called bile and glycogen.

3. What is the bile like?

It is a liquid composed chiefly of water and salts with a little fat. When the partly digested food passes from the stomach into the first of the smaller intestines the bile flows in upon it from a small sack in the liver and helps to complete the digestion.

4. What is glycogen?

A substance much like starch.

5. How does it help the body?

It is not fully known, but it is thought that it is changed into sugar and helps to nourish the tissues.

6. How is the liver affected by the use of alcohol?

It is stimulated to such a degree that it becomes overworked and inflamed.

7. Does it change in either size or appearance?

It does. Moderate drinking causes it to become softer, to increase in size and to be marked with patches of fat.

8. Is not fat a sign of health?

It is not. It is due to oily substances which should be thrown off from the liver.

9. How is the liver injured by the excessive use of alcoholic liquors?

In some cases it wastes away and becomes very small; in others it increases greatly in size, becomes hard in spots, and is covered with fat.

10. What do medical men call such a liver with hard spots in it?

The hob-nailed or drunkard's liver.

11. How is the health of a man affected by this condition of his liver?

He looses strength and becomes a constant sufferer.

XXVIII.—THE KIDNEYS.

1. Where are the kidneys situated?

In the lower part of the abdomen, next to the back.

2. What are they like?

They are composed of flesh and are from four to six inches long and from one to two inches thick.

3. What special work do they perform?

The blood which passes into them from the heart is filled with impurities which they separate as it passes through.

4. Has the use of alcohol any effect upon them?

Yes; like the liver they become inflamed and diseased from the overwork which the alcohol causes.

5. What is the nature of their disease?

They are gradually marked with fat, waste away and become granular, producing what is known as Bright's disease.

6. Why is it thought that Bright's disease of the kidneys is caused by the use of liquor?

It is asserted by Dr. Christison, of Edinburgh, that of all the cases of this disease met with in his practice, from three-fourths to four-fifths of the sufferers used alcohol regularly.

7. Have other physicians found that men who use alcoholic stimulants are subject to Bright's disease?

Yes, in countless cases.

8. May any other troubles be traced to diseases of the kidneys?

Yes; it is the opinion of medical writers that as the blood is not entirely purified in passing through the kidneys it becomes poisoned and produces gout and rheumatism.

QUESTIONS.

1. Is the liver in the chest or abdomen?
2. Into what does it change the blood?
3. What is the bile?
4. Is the fat upon the liver a sign of health? Why not?
5. What is the hob-nailed liver?
6. Does a man with such a liver have good health?
7. Describe the kidneys.
8. What duty have they in connection with the blood?
9. How are they impaired by the use of alcohol?
10. What is Bright's disease?
11. What proof is there that the use of liquors has anything to do with the cause of it?
12. What is thought to be the cause of gout and rheumatism?

XXIX.—THE BLOOD—THE CIRCULATION.

1. What is the blood like?

It is a liquid which varies in color from a deep red to purple.

2. Of what is it composed?

Of water, fibrin, iron and coloring matter.

3. What is the fibrin like?

It is a kind of fibre which becomes visible when a drop of blood dries.

4. What is the coloring matter called?

It is known as hæmeglobin, but sometimes there are impurities in the blood which change its appearance.

5. Is there anything unusual in the structure of the blood?

Yes; it is formed of tiny bodies called corpuscles,* which are so small that it requires the aid of a microscope to see them.

A B

A, *blood-disks of human blood, highly magnified;* B, *blood-disks in the blood of an animal.*

6. Are they red in color?

There are two kinds, the red and white.

7. How much blood is there in the human system?

About one-thirteenth of its weight.

8. How much should there be in a person weighing one hundred and sixty pounds?

About six quarts.

9. Is the blood in a state of rest or motion?

It is in constant motion throughout every part of the body.

10. What is this motion called?

The circulation of the blood.

11. What are the names of the principal parts of the body through which the blood passes.

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* Corpuscle means a small body.

The lungs, heart, arteries, capillaries and veins.

12. Describe the heart.

It is pear shaped and hollow, and that of any person is said to be about the size of his fist.

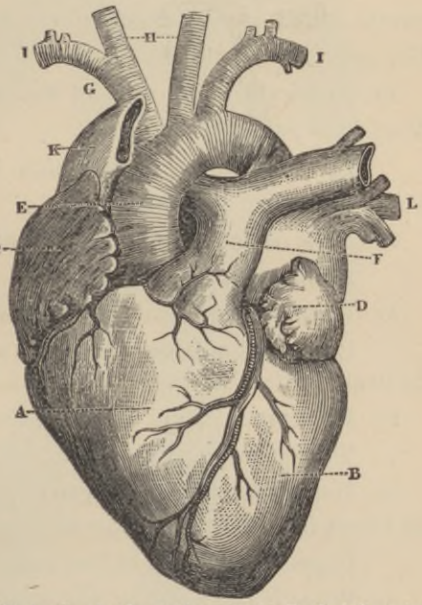
13. What is the inner part of the heart like?

It has two divisions, called the right and left sides, and the right side has two openings in it called the right auricle and right ventricle, while the left has two of the same kind called the left auricle and left ventricle.

14. Describe the circulation of the blood.

The blood starts from the lungs and flows first into the left side of the heart; then it is forced* out of the heart into the arteries and passes to all parts of the system.

15. What are the arteries like?



The heart. A, *the right ventricle;* B, *the left ventricle;* C, *the right auricle;* D, *the left auricle.*

Near the heart they are like tubes with strong walls, but they soon divide, and finally become so small as to be scarcely visible.

* The heart contracts and forces the blood from it.

16. When the blood reaches the ends of the arteries where does it go?

It passes through the capillaries, which are tiny pores not larger than hairs.

17. How does it pass through the capillaries?

Somewhat like milk passing through a thick cloth, except that the cloth has very much larger openings in it.

18. What then becomes of the blood?

It returns to the right side of the heart through vessels called veins, which unite and become larger as they approach the heart.

19. From the right side of the heart where does the blood then pass?

Into the lungs, from which it returns to the left side of the heart a second time.

20. How often does the heart beat per minute?

About seventy times.

21. How may the beats of the heart be counted?

Either by placing the hand upon the breast, over the heart, or feeling the pulse in the wrist.

22. How much blood is forced through it at each beat?

Six ounces, or almost half a pint.

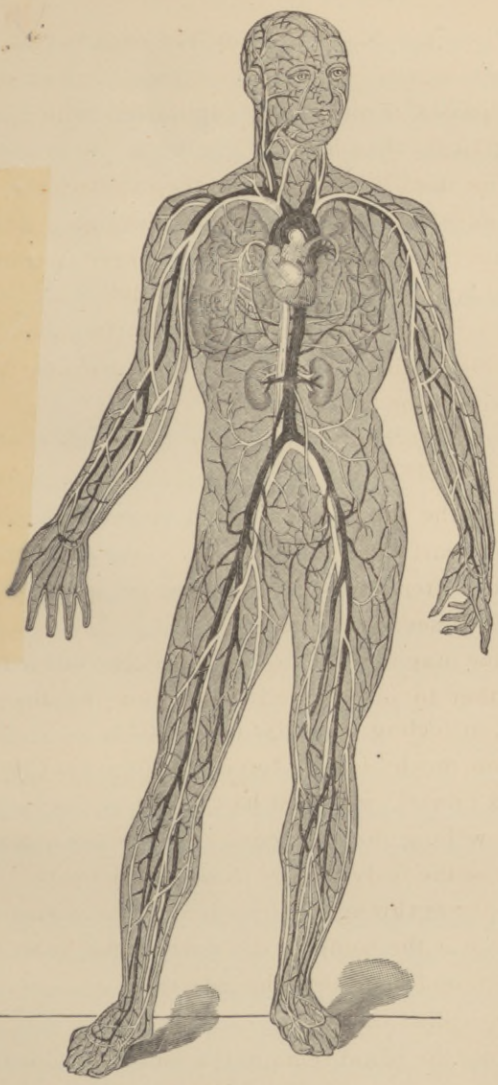
23. How long does it require for the six quarts, or all the blood in the body to pass through the heart?

It passes through in less than half a minute.

24. What is the name of the part of the heart through which the blood flows into the arteries?

It is called the aorta.

25. Does the blood remain the same in color from the time it leaves the lungs until it returns to them again?



The Circulation.

It does not; when it leaves the lungs it is rich and red and remains so until it reaches the ends of the arteries after which it becomes impure, and when it returns to the lungs through the right side of the heart it is of a dark purple color.

26. Is it possible to see any of the veins which are filled with the purple blood?

Yes, in the hands, wrists, arms and forehead.

XXX.—THE CIRCULATION. (CONTINUED.)

1. What is the blood sometimes called?

The life of the body.

2. Why is this?

Because when an artery is cut the blood spurts out at each beat of the heart, and the man soon dies.

3. How may the escape of the blood be stopped when an artery is cut?

When an artery, in either an arm or leg, is cut a handkerchief should be twisted and tied loosely around the limb, above the cut; then a stick should be passed through the handkerchief and twisted until the blood stops flowing.

4. How does the use of alcoholic stimulants affect the action of the heart and the circulation of the blood?

In two cases the stimulants may be of advantage, in others, they produce great injury.

5. What are the two cases in which the stimulants may be of advantage?

(1) When the blood is clotted from the action of other poisons and will not flow, and (2) in cases of unusual weakness, as during a fainting spell.

6. How do the stimulants help in such cases?

By keeping the blood in circulation until the strength returns.

7. What mistake do men make about the use of stimulants?

They think that because they sometimes feel weak it will help them to use stimulants all the time.

8. When alcoholic stimulants are used regularly, how do they injure the heart and blood?

In four principal ways, (1) by increasing the circulation; (2) by overworking the heart; (3) by changing the character of the blood; (4) by causing other diseases.

9. How may it be shown that the use of stimulants increases the circulation?

We have seen that the heart beats at an average rate of seventy times per minute, but when wine is taken into the system, the pulse soon increases to seventy-five and when brandy is used it causes the pulse to beat more than eighty times per minute, instead of seventy.

10. How is the heart overworked?

At each beat six ounces of blood are driven through it, and if, on account of liquor, it is made to beat five more times per minute, thirty extra ounces of blood would be forced through, and in one hour more than one hundred extra pounds of blood would be pumped into the arteries.

11. At this rate, if a man were under the influence of

liquor for only ten hours, how much extra work would the heart have to perform?

Enough to pump out more than a thousand pounds of blood.

12. How is the heart affected by this extra action?

It wears out before its time, and many habitual drunkards die suddenly on account of the heart giving way under the burden.

13. How does alcohol change the character of the blood?

In its pure state it absorbs water most greedily, and when taken into the system in the shape of unusually strong whiskey, or brandy, it absorbs water so rapidly that the blood becomes clotted and tends to produce death by congestion.

14. Is the blood changed in any other way than by becoming clotted through the use of strong alcohol?

Yes; it is known that the constant use of wine so impairs the digestion that the very shape of the red corpuscles changes, and the entire blood instead of being rich and red, becomes poor, thin and watery.

15. How are diseases produced through alcohol in the blood?

"*It injures and degenerates the tissues in all parts of the body, and produces premature old age.*" (Ringer.)

QUESTIONS.

1. Of what is the blood composed?
2. How may the fibrin in it be seen?
3. What are the corpuscles?

4. How much blood is there in the human system.

5. How much blood should there be in the body of a man weighing two hundred and twenty-one pounds?

6. What is meant by the circulation of the blood?

7. Describe the inner part of the heart.

8. What is the color of the blood when it is flowing through the arteries?*

9. What is the name of the part of the heart where the blood flows into the arteries?

10. What are capillaries?

11. How many times does the heart beat per minute?

12. How much blood is there forced through it at each beat?

13. What is the pulse?

14. Why is the blood of a purple color while in the veins?

15. How should the flow of blood from an artery be checked?

16. Name four ways in which the actions of the heart and blood are injured by the use of alcoholic stimulants?

17. How is the heart overworked?

18. How does strong alcohol clot the blood?

19. How does the regular use of stimulants change the blood?

20. Why do drunkards die suddenly?

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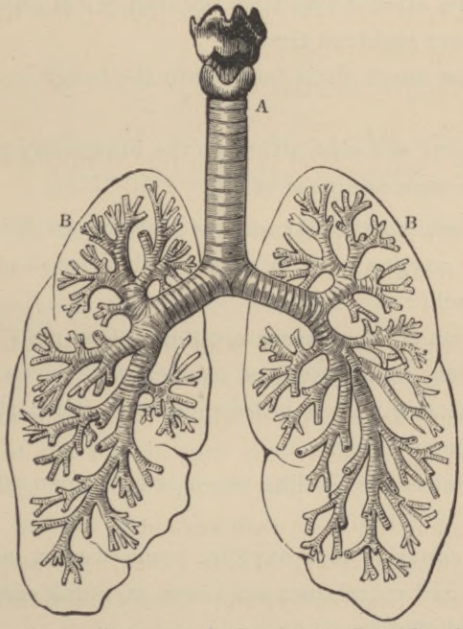
* In the pulmonary artery, which extends from the heart to the lungs, the blood is of a deep purple color. This is because the impure blood from the veins passes to the lungs through it.

XXXI.—THE LUNGS.

1. What are the lungs like?

They are two large bodies connected with the windpipe; they are situated in the chest and almost envelop the heart.



The lungs, showing the larynx. A, *the windpipe;* B, *the bronchial tubes.*

2. Of what are they composed?

Of an elastic flesh-like substance, filled with small blood vessels and air cells.

3. Are there many or few of the air cells?

They number more than 600 millions.

4. Of what special use are the lungs?

By means of them air is inhaled, the blood is purified, heat is produced, and impure air is exhaled.

5. What common term is given to inhaling and exhaling air?

It is called breathing.

6. How often do we thus breathe per minute?

About eighteen times.

7. How much air is taken into the lungs each time we breathe?

About one pint, although the lungs may be made to hold more than six pints of air.

8. Of what is the air composed when it enters the lungs?

Of oxygen and nitrogen with a small quantity of carbonic acid?

9. In what proportions are these elements?

Twenty-one parts of oxygen and seventy-nine of nitrogen in 100, with only four parts of the carbonic acid in 10,000 parts of air.

10. What is the air like when it is thrown off from the lungs?

It contains less oxygen, some watery vapor with ammonia, and more than 100 times as much carbonic acid as when inhaled?

11. How are such changes produced?

When all the tiny air cells of the lungs are filled with air and the blood is passing freely around them, the oxygen of the air unites with the blood, thus making it richer, while at the same time it frees from it the carbonic acid and other impurities.

12. How do the lungs aid in producing heat for the body?

The heat is the result of the chemical action which takes place when the oxygen of the air unites with the blood.

13. How is this heat carried to all parts of the body?

By the circulation of the blood.

XXXII.—EFFECTS OF STIMULANTS UPON THE ACTION OF THE LUNGS.

1. How does the use of stimulants affect the action of the lungs?

It injures the tissues, weakens the blood, changes the character of the breath, and induces consumption.

2. How is the tissue matter injured?

The alcohol of the liquor produces congestion of the walls of the 600 millions of air cells.

3. What is meant by the congestion of any body?

It shrivels and becomes smaller, like a partly withered leaf.

4. How is the blood weakened?

Owing to the congestion of the cell walls, the blood in the tiny vessels cannot draw oxygen from the air, and hence becomes thin and watery, like that mentioned in the previous chapter, which was caused by indigestion.

5. How is the breath affected?

Instead of being natural, it becomes strong and disagreeable.

6. How may this change be explained?

A part of the alcohol which is taken into the system soon enters the blood, and, with other impurities, is forced from the heart into the lungs, where, by means of heat, it is converted into poisonous vapor which is thrown off at every breath.

7. How does the use of alcohol induce consumption?

On account of the congestion of the tissues, they shrivel up and become partly inactive; the lungs then become feeble and gradually waste away. The result is, that when the regular drinker is attacked by a hard cold, his lungs, not being able to bear the strain, give way and consumption follows.

8. What direct medical testimony may be given against the use of alcohol?

That of Dr. H. N. Martin, of the John Hopkins University, Baltimore, who says: "Alcohol is a whip to the body, and should no more be used by persons in health than the lash should be laid upon the back of a willing horse."

General Review.

1. What are stimulants?
2. What are narcotics?
3. What is fermented liquor?
4. Can you name four fermented liquors?
5. Describe alcohol.
6. Why is it not safe to use hard cider?
7. How is wine made?
8. Name four kinds of wine.

9. How much alcohol do the grape wines contain?

10. What is the effect of using wine for a number of months? Does the taste for it increase or decrease?

11. How is beer made?

12. Why is it called malt liquor?

13. Do persons ever become drunk by using beer?

14. What is strong drink?

15. Name four kinds.

16. How is brandy distilled from wine.

17. Describe the appearance of a man when intoxicated

18. Name the internal organs which are injured by the use of alcohol.

19. Describe the stomach?

20. How much will it hold?

21. What is the mucous membrane?

22. What is the gastric juice?

23. What is the chyme?

24. Is all of the food fully digested while in the stomach?

25. What do medical men think of alcohol as food? Do they say that it is harmless or dangerous?

26. How does the continued use of whiskey affect the action of the stomach?

27. Can you state two ways in which the liver is injured by the use of alcohol?

28. Describe the kidneys?

29. How are they injured through the use of liquor?

30. Do you remember what Dr. Christison, of Edinburgh said about Bright's disease?

31. How much blood is there in the human body?

32. Is the blood at rest or in motion?

33. Can you describe the heart?

34. Can you describe the circulation of the blood?

35. Do you know whether the blood which passes from the heart to the lungs is of a red or purple color?

36. How many times does the heart beat per minute?

37. How is the action of the heart affected by the use of stimulants?

38. How does the use of liquors change the blood?

39. Describe the lungs?

40. Describe the changes which take place when we breathe.

41. Do you know how the blood is purified by means of the lungs?

42. How does the use of alcohol induce consumption?

PART FOURTH.

The Nervous Organization and the Effects OF ALCOHOLIC STIMULANTS AND NARCOTICS.

PART FOURTH.

XXXIII.—THE NERVOUS ORGANIZATION.

1. What are the principal organs in the nervous system?

The brain and spinal cord.

2. Where is the brain found?

In the upper part of the head.

3. What is it like?

It is composed of soft grayish white tissue matter, almost like that which is found in the spinal cord.

4. How much of this tissue matter is there in the brain?

Over three pounds.

5. How is the brain protected?

By a delicate membrane next to it and a thick solid covering outside, called the cranium or skull.

6. Has the brain any special arrangement in the skull?

Yes; there are two divisions called the cerebrum, or large brain, and the cerebellum, or small brain.

7. Which is the large brain, and what is it like?

It comprises nearly all of the brain matter and extends in two even parts somewhat like rolls, from the front to the back part of the head.

8. Are the rolls smooth on the surface?

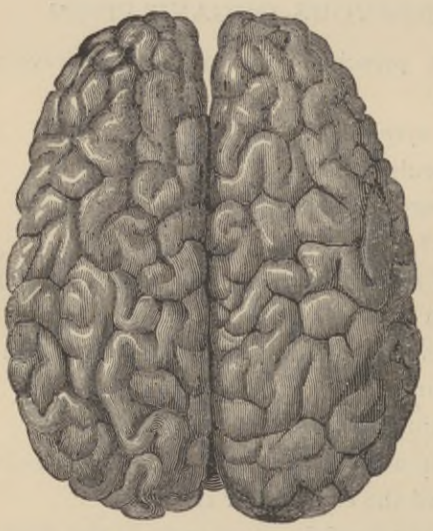
They are not, they are covered with small furrows and ridges.

9. Are the rolls entirely separated from each other?

They are free at the top and front, but united at the lower part next to the small brain.

10. What is the small brain like?

Its surface is smooth, and is more like a bundle of fine strings. It connects the principal brain with the spinal cord.



Surface of the cerebrum.

11. Has the brain any other formation in it than that of the tissue matter?

Yes, it is filled with tiny veins and blood vessels, and has countless nerves attached to it.

12. Describe the nerves.

They are like bright silken cords, and make connection between the brain and the eyes, ears, heart, and every other part of the body.

13. What is the mind?

It is the power which directs and controls the voluntary movements of the body.

14. What are the voluntary movements of the body?

Those of the head, hands, arms, feet and other parts which move at the will of man.

15. Are there any movements of the body over which the will has no control?

Yes; the beating of the heart, the circulation of the blood, the digestion of food, the act of breathing, and other motions, which continue while we are asleep the same as when we are awake.

16. Where is the mind thought to reside?

In the brain.

17. How is the mind able to understand the wants of the body, so as to protect it from injury?

By means of the senses of sight, taste, touch, hearing and smelling.

18. Through which organs are the five senses used?

The eyes for seeing, the tongue for tasting, all parts of the body for touching, the ears for hearing and the nose for smelling.

XXXIV.—EFFECTS OF ALCOHOLIC STIMULANTS UPON THE MIND.

1. When a person uses liquor, how does it affect his mind?

It depends somewhat upon the strength of the liquor, as the effects vary according to the amount of alcohol taken into the system and the time of the day at which it is used.*

2. How is the mind affected by mild drinks, such as wine and beer?

When a mild drink is used the mind, even though weary, becomes more active. Thoughts pass readily

* The same quantity of alcohol taken upon an empty stomach produces a greater effect than when taken after a full meal.

through the brain, the person shows a lively playful spirit, with a tendency to speak more rapidly than usual.

3. What change takes place when a man takes several glassfuls of wine?

The mind is stimulated to such an extent that it seems to tremble and quiver like an engine carrying too much steam. It begins to lose its control over the body, the man becomes noisy and boisterous, and reels to and fro as he walks.

4. If, while in this condition, the man drinks still more wine, what is the effect upon him?

The excess of alcohol attacks his brain so rapidly that it produces inflammation, with such pain in the head that the temper of the man changes immediately. Instead of being friendly and playful, he becomes sullen and dangerous. His eyes grow bloodshot and lose their power; his tongue swells so that he only mutters in trying to speak; while the mind loses its power to such an extent that the man cannot tell friend from stranger, and frequently, like a savage beast, makes deadly attacks upon all who are around him.

5. How does this sad state end?

The mind gives way under the attack of the alcohol, and the man sinks down into a state which is usually called sleep, but it is not sleep, it is insensibility produced by the poisonous alcohol.

6. How does the man feel when he regains his consciousness?

He is weak and sore, and his head aches so badly that he remembers but little of his experiences when intoxicated

7. Does a man even remember so as to give a full and clear account of what he does while intoxicated?

As a rule, he does not, the past is like a dream.

8. How is the mind of man affected by the use of *strong drink?*

In the same way as from the use of mild drinks, except that the action is more rapid, the mind gives way sooner, and is greatly injured by the use of the strong liquors.

9. How is the mind injured?

By the man acquiring such an appetite for liquor that he is unable to control it, and drinks too much, which produces, as we have before seen, such severe inflammation and congestion of the brain that the mental power is weakened, and sometimes delirium tremens results from such excessive use of alcohol.

10. What is meant by congestion of the brain?

It shrivels up and becomes smaller, changing as a piece of meat does when placed in alcohol.

11. How is this known to be true?

Physicians have found from the examination of the brains of those who have died from the excessive use of liquor that they were shriveled, and also that in some cases pure alcohol had collected around the brain itself.

12. What is the nature of the disease called delirium tremens?

It is a disease of the mind produced by the excessive use of liquor for several days at a time. At such times the man loses the use of his mind, and imagines that his friends are trying to injure him, or that he is chased by

demons, and he fills the air with the most heartrending cries and shrieks of agony.

13. What is insanity?

Loss of the mind. It is somewhat like delirium tremens, except, that in some cases, insane persons are quiet and harmless; but, as a general rule, those who lose their minds from the use of liquor are violent and dangerous.

14. Why then is it that men who see others suffering so terribly from the use of alcohol will consent to use it themselves?

A great many take liquor for the sake of the pleasant effects at first produced, and expect to stop drinking after that, so as not to become intoxicated.

15. Are they able to do this?

Yes, some take liquor for years without becoming intoxicated, but countless thousands cannot regulate its use, and are constantly falling into disgrace, drunkenness and ruin.

16. Do those who use liquor for years without being intoxicated, suffer in any way from its use?

Yes, in the stomach, liver, kidneys, and other internal organs.

17. If some persons use alcohol for the pleasant effects which it produces, why do others use it?

For the stimulus which the mind receives from it.

18. Who are the persons that use it for this reason?

Public speakers and others who are engaged in mental labor. They claim that the mind becomes wearied and requires a tonic.

19. Is it wise to use liquor of any kind in such cases?

It is not, for the help is only temporary, and it requires an increased amount of liquor the longer it is used, until, as a general rule, inflammation of the brain follows, resulting in great injury to the mind.

20. Do men feel satisfied with themselves after having used liquor for a long time?

They do not. They resolve again and again that they will give up its use.

21. Do they keep the good resolution?

They do not. After going without for a few days, the temptation becomes too strong, and they drink again.

22. How is the moral nature of man affected by the use of alcohol?

It always suffers. The drinking man changes gradually from truth, manliness and generosity to selfishness, and depravity. He is not only miserable himself, but destroys the happiness of others.

23. Are the men who use alcohol weak in mind?

The majority probably are, yet there are men in every town in our land of whom it is said: "They have brilliant minds, but are slaves to drink."

24. What lesson should we learn from these things?

That alcohol, while pretending to be a friend, is our most dangerous enemy. He is the tyrannical ruler of an empire filled with vice and wretchedness.

25. What safe rule may be given in order that we may escape the dangers of alcohol?

"Touch not; taste not; handle not."

QUESTIONS.

1. Can you name the principal organs of the nervous system?

2. What is the weight of the brain?

3. What is the cranium?

4. Is the cerebrum the large or small brain?

5. What is the appearance of the large brain?

6. What are the nerves like?

7. What is the mind?

8. Can you name four movements of the body over which the mind has no control?

9. What are such movements called?

10. Can you name the five senses?

11. How does the use of a *small* amount of wine affect the mind?

12. How does a man change in temper and appearance after drinking several glasses of wine?

13. What is the appearance of a man when intoxicated?

14. How does a man feel when he regains consciousness after being drunk?

15. How is the brain injured by the use of liquor?

16. What is delirium tremens?

17. Why do men use alcohol?

18. Do they often try to give up its use?

19. Do men having bright minds become slaves to drink?

20. What is the only safe rule in regard to alcohol?

XXXV.—THE EYE.

1. What kind of an organ is the eye?

One of the most delicate of all the parts of the body.

2. How is it shaped?

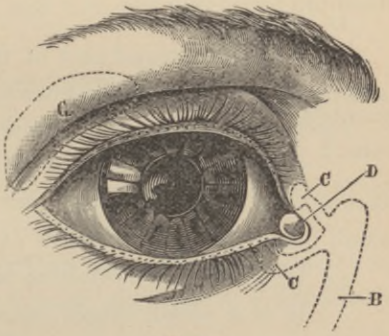
It is almost round, and is about an inch in diameter or thickness.

3. Has it one or more than one part?

It is composed of a number of parts.

4. How are they arranged?

There are three layers or coats upon the outer part of the eye, and four other parts through which the light passes into the eye towards the brain.



The eye.

5. How are the enveloping coats named, and what are they like?

The one upon the outer part is called the sclerotic (skle-rot-ic) or white of the eye.

6. Describe the second coat.

It is called the choroid (ko-roid) and is next to the white of the eye. It is a deep black color, and is to shut out all the light except that which passes into the eye from the front.

7. Describe the third coat.

It is called the retina, and is next to the choroid.

It is composed of a layer of fine flesh, filled with delicate nerves which lead to the brain.

8. What are the names of the other parts of the eye?

The cornea, aqueous humor, crystalline lens and vitreous humor.

9. Describe the cornea.

It is a thin film in the front of the eye. When one person looks straight before him and another stands at his side and looks at his eye, he will see the cornea in the front of the eye, like the crystal of a watch.

10. What is the aqueous humor like?

It is a thin liquid, like water, which is found just under the cornea.

11. Describe the iris.

It is the colored part of the eye. It is of different colors, from blue to gray, brown, and black.

12. Describe the pupil of the eye.

It is an opening in the iris, for the light to pass through, so as to reach the inner part of the eye. It is the small black spot in the centre of the eye.

13. Describe the crystalline lens?

It is a small, bright, round body just back of the pupil. It is not round like a ball, but is flattened and is curved a little more on the side next to the brain than it is in front.

14. Describe the vitreous humor?

It is a thick liquid, like mucilage, which fills all of the interior of the eye. The rays of light after passing through it fall upon the retina, and make an impression on the brain.

15. How is the eye protected?

By lids which cover it at the approach of anything, such as strong light, an insect, or the hand, which might injure it.

16. Have the lids any other use?

Yes, they keep the eyes moist and free from dust.

17. What useful purpose do the eye-brows and eye-lashes serve?

They also protect the eyes from dust, and prevent water and other liquids from flowing into them.

18. What are some of the troubles which persons experience with their eyes?

Some are near-sighted, some are far-sighted, while others have eyes which are not alike and hence cause pain and distress.

19. When is a person near-sighted?

When he can see clearly for only a short distance. Some near-sighted persons cannot tell the faces of their friends who walk at a distance of but a few steps from them.

20. When is a person far-sighted?

When he can see farther than others, but cannot see to read without holding a book or paper at a distance of two or three feet from him.

21. Are persons born with imperfect eyes, or do they injure them in any way?

Some are born so, but the greater portion of the people have brought the injury upon themselves.

22. How have they done so?

In many ways. Some study too much and overwork their eyes; others read in the twilight and strain their eyes;

pupils study in dark school-rooms ; persons study or sew by the weak light of a candle, or the flickering flame of the gas jet, and thus almost ruin their eyesight.

23. What do such persons do when their eyes ache and they cannot see to work or study?

They use spectacles to assist the eyes, which relieves them from pain.

24. What good rules may be laid down for the care of the eyes?

The following :

(1) Study and work only in a good light.

(2) Do not overwork the eyes.

(3) When engaged in work or study take a position with the side or back to the light, as the bright light injures the eyes.

25. How do the eyes change when alcohol is used?

They become inflamed and blood-shot and lose their power.

26. How do they change when tobacco and opium are used?

They become dull and heavy, and cause constant pain.

XXXVI.—THE EAR.

1. How many principal parts are there in the ear?

Three.

2. What are they?

The outer, middle, and inner ear.

3. Describe the outer ear?

It is the part which may be seen and felt. It is

formed of gristle, or cartilage, and is curved so as to receive as much sound as possible.

4. What is the name of the part next to the outer ear?

The auditory canal. It is about an inch in length and extends to the middle ear.

5. Describe the middle ear?

It is a small opening, having within it three tiny bones, called the hammer, the anvil, and stirrup.

6. Is the mouth connected with the ears?

Yes, by tubes leading from the middle ears.

7. Is it possible to hear through the mouth?

It is.

8. How may this be shown?

By taking a watch and holding it between the teeth, while the hands are held against the ears. The ticking of the watch may then be heard as plainly as with the ears.

9. What is the inner ear like?

It is nearest the brain and is formed of many parts. It contains delicate hairs and fibres, and by means of the nerves within it sounds are carried to the brain.

10. What is the name of the principal nerve which carries the sound to the brain?

The auditory nerve.

11. When is a person deaf and dumb?

He is deaf when he cannot hear, and dumb when he cannot speak.

12. What is the cause of deafness?

In some cases persons are born so, when it is called a natural defect, in others they lose their hearing through mistakes and accidents.

13. What are some of the mistakes which are commonly made?

Boxing the ears of children is a frequent mistake of parents; a switch for correction is far better than the open hand.

14. How do children often injure their hearing?

By thrusting sharp pointed instruments into their ears. When the part of the ear, called the drum, is pierced it loses its power and deafness follows.

15. How do the ears often become injured?

By wax, which forms within them and hardens, so as to shut out the sound.

16. How may it be removed?

By gently rubbing the ear with a soft brush and warm water.

17. When insects crawl into the ears how may they be removed?

By dropping into the ear a little sweet oil, as hot as can be borne. The insect will soon die and slip out.

18. When the ears are partly frozen what is the effect upon them?

They become tender, and when exposed to cold a second time suffer more than at first.

XXXVII.—CRIME—A VISIT TO THE JAIL.

1. It has been stated that one of the effects produced upon the mind of man by the use of alcohol is that he is led into vice and wretchedness. How may this statement be confirmed?

By seeking to find the cause of sickness, poverty and crime.

2. How is alcohol responsible for the sickness of people?

In this way. Men, while crazed with drink, strike their wives, cruelly beat their children, and cause accidents to others which result in long continued suffering.

3. How is alcohol responsible for poverty?

Men, while under the influence of liquor do not like to work, and consequently neglect their families and leave them either to starve or depend upon others for support.

4. What has liquor to do with crime?

It is asserted most positively that it is the one great agent in America and Europe which causes more than seventy-five per cent. of all the crimes common to man.

5. Are there any facts by which the truth of this statement may be established?

Yes. In every jail and penitentiary, a book is kept in which are recorded the principal facts concerning every prisoner; as, his nationality, age, offense, term of confinement, and whether he abstained from the use of liquor, or used it moderately.

6. Are these books open for inspection?

They are.

7. What information do they furnish concerning the use of alcohol by those who have violated the law?

In York, Pennsylvania, the home of the author,* the record states that from January 1st, 1884, to January 1st, 1885, there were 256 persons imprisoned in the jail.

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* See foot-note, page 10.

8. Of that number how many were men?

There were two hundred and forty-nine men and only seven women.

9. Of the 256 prisoners, how many are recorded as being moderate drinkers?

Two hundred and thirty-six! or all but twenty.

10. What proportion does this make of the entire number?

Over ninety-two (92.19) per cent.

11. What does this mean?

It means that ninety-two out of every hundred prisoners in the York jail during the year 1884 were accustomed to use liquor.

12. Were they chiefly young or old men?

By far the greater part were young men; sixty-three being under twenty-one years of age, *while over* 200 *were under thirty-five years of age.*

13. What testimony did they give concerning the use of liquor as connected with their crime?

The majority stated with shame that the love of strong drink led them into bad company, that with evil companions they became intoxicated, and while under the influence of liquor they committed the crimes for which they were imprisoned.

14. What have we found, in the first part of this volume, to be the meaning, in medicine, of the term intoxication?

We have found it to mean, in a poisoned state.

15. Had the men who were in prison not used liquor would they have committed the crimes for which they suffered?

Many of them said, again and again, that had they been sober, they would not have broken the law; but that, at the time, they scarcely knew what they were doing.

16. What is the name of the poison which thus deprived them of their reason and left them in disgrace behind the prison bars?

It is alcohol, the essence of all fermented and distilled liquors.

17. What hope is there of saving men from this dangerous enemy of both their bodies and souls?

They must be educated to see the danger that they may escape from it.

18. Why will education help them?

The record in the York jail shows that of the 256 prisoners in it, during the year 1885, *only three had received a good education.*

XXXVIII.—EXPOSURE TO COLD AND HEAT.

1. What reasons have we found which men give for the use of alcohol as a drink?

(1) For the pleasurable effects which it produces; (2) to stimulate the mind; (3) to aid the digestion; (4) to overcome the effects of other poisons.

2. What answers have been given to these reasons?

We have endeavored to show (1) that the pleasure is but temporary, ending in pain and misery; (2) that the mind is stimulated until inflammation of the brain follows; (3) that although a small amount of alcohol may aid the digestive organs, yet *men rarely* take it according to

the advice of a physician, but drink as they please, until all the internal organs suffer from disease.

3. Are there any other reasons which are given in support of the use of liquor?

Yes, there is one which is always given.

4. What is it?

When out in the rain or exposed to the storms of winter men use a great deal of liquor, saying that it is really necessary in order to keep them warm.

5. Is it then ever used in warm weather?

Yes. Men then say that they feel weak and need something to strengthen them.

6. What is the truth concerning the use of alcohol in warming the body?

Scientific and medical men assert most positively that alcohol does not furnish heat to the body, but in reality makes it cooler.

7. How do scientists prove the truth of this positive assertion?

By taking a man in good health and determining the temperature of his body, which may be done by means of a thermometer, and then giving him alcohol; when after a time the temperature is again taken, it is always lower, showing a loss of heat.

8. Has it not been stated that soon after liquor is taken the body becomes slightly warmer?

Yes, it is thought (Richardson) that the cause of this is that heat is really passing from the body, somewhat like heat escaping from a pan of warm water.

9. When a person is intoxicated to such a degree as

to be insensible, how does the temperature of his body differ from that before the alcohol was taken?

It is much lower, showing a loss of heat.

10. How do medical men prove the truth of their assertions that alcoholic drinks make the body cooler instead of warmer?

They have tried it hundreds of times in cases of disease, and finding that it makes the body cooler, they now recommend that it should be used in special cases to keep down high fever.

11. What medical authority may be cited in support of the view that it lowers the temperature of the human body?

That of Dr. Bartholow, who says: "Considerable doses of alcohol cause a decline in the temperature of the body, which is even more marked in 'fever' than in the normal state."*

12. What other authority may be cited?

That of Dr. B. W. Richardson (see Alcohol on the Body and Mind, page 21), one of the most eminent physicians of England, who says: "I was ignorant, and that is why I sought for certain knowledge. To the research I devoted three years, from 1863 to 1866, modifying experiments in every conceivable way. * * * *

"The results, I confess, were as surprising to me as to any one else. They were surprising from their definiteness and their uniformity. They were most surprising from the *complete contradiction* they gave to the popular

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*See Bartholow, Materia Medica and Therapeutics, page 331.

idea that alcohol is a supporter and sustainer to the animal temperature."

13. What further authority may be cited?

That of Dr. W. S. Greenfield, who, in writing upon alcohol (see Health Primer, page 73), states that "although it may be useful in overcoming a chill, yet when we have to do with exposure to a cold climate or a very hot one, the question is very different. The habitual use of alcohol lowers the powers of resistance to cold or heat; that is, it interferes with the central controlling authority and so works mischief."

14. Do many of the prominent medical writers assert that alcohol injures instead of helps the body when exposed to very cold weather?

Yes; almost without exception the medical writers strongly advise against the regular use of liquor by those who are exposed to severe cold.

15. What do we know about men who have used alcoholic stimulants while in the frozen regions of the North?

We know that there have been several expeditions by men who have tried to reach the North Pole, and that those who used liquor suffered more than others who did not.

16. Can any special cases of injurious results be given?

Yes. "In 1619, the crew of a Danish ship of sixty men, well supplied with provisions and ardent spirits, attempted to pass the winter at Hudson's Bay, but fifty-eight of them died before the spring; while in the case of an English crew of twenty-two men, in the same circumstances, but destitute of distilled spirits, only two died. In

another instance, of eight Englishmen, also without spirituous liquors, who wintered in the same bay, the whole party survived and returned to England ; and four Russians left without ardent spirits or provisions, in Spitzbergen, lived for a period of six years, and were at length restored to their own country. In the winter of 1796 a vessel was wrecked on an island off the coast of Massachusetts ; there were seven persons on board ; it was night ; five of them resolved to quit the wreck and seek shelter on shore. To prepare for the attempt, four of them drank freely of spirits ; the fifth would drink none. They all leaped into the water ; one was drowned before he reached the shore ; the other four came to land, and in a deep snow and piercing cold, directed their course to a distant light. All that drank spirits failed, and stopped, and froze, one after another ; the man that drank none reached the house, and about two years ago was still alive."*

17. What is known of the effects of its use in hot climates ?

When soldiers have been sent to Mexico, Egypt, or India, it has been found, in every case, that those who used liquor have been the first to fall sick and die while upon the march.

18. Have the officers ever advised their men against the use of alcoholic stimulants ?

Yes. Sir Charles Napier in addressing the soldiers of the Ninety-sixth regiment, at Calcutta, in 1849, spoke as follows : "Let me give you a bit of advice—that is,

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* See Carpenter on Alcoholic Liquors, page 108.

don't drink. I know young men do not think much about advice from old men. They put their tongue in their cheek, and think they know a good deal better than the old cove who is giving them advice. But let me tell you that you are come to a country where, if you drink, you are dead men. If you be sober and steady, you'll get on well; but if you drink, you're done for. You will be either invalided or die. I knew two regiments in this country, one drank, the other didn't drink. The one that did drink has been all but destroyed. The one that didn't drink is one of the finest regiments, and has got on as well as any regiment in existence. For any regiment for which I have a respect (and there is not one of the British regiments that I don't respect), I should always try and persuade them to keep from drinking. I know that there are some men who will drink in spite of their officers; but such men will soon be in the hospital, and very few that go in, in this country, ever come out again."*

QUESTIONS.

1. How is alcohol responsible for the sickness of people?
2. How is poverty caused through alcohol?
3. What is recorded in every jail concerning prisoners?
4. How many persons were imprisoned in the York (Pa.), jail during the year 1884?
5. How many out of every hundred are recorded as being moderate drinkers?
6. Were the prisoners chiefly young or old men?

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* See Carpenter on Alcoholic Liquors, page 118.

7. Do you remember how many of them were under thirty-five years of age

8. Did any of them state whether they were intoxicated when they committed the crimes for which they were punished?

9. Of the 256 prisoners, how many had received a good education?

10. Do men, as a rule, take wine and strong drink according to the advice of a physician, or just as they please?

11. Why do men who are out in the cold a great deal use liquor?

12. Do men in hot climates give any reasons for taking liquor?

13. When a man is out in a storm, for a long time, does alcohol really warm his body?

14. How do we know that alcohol does not warm the body?

15. Can you name two prominent physicians who state that alcohol makes the body cooler instead of warmer?

16. Do you remember how the sixty men who went to Hudson's Bay, when, well supplied with food and liquor, succeeded in passing the winter?

17. How many of the five men who left the ship took liquor before they started? Do you remember what became of the men?

18. What advice did Sir Charles Napier give to the Ninety-sixth regiment, at Calcutta, in 1849?

XXXIX.—NARCOTICS.

1. What are narcotics?

Substances which, when taken into the system, tend to cause sleep, stupor, or death.

2. What are the names of some of the narcotics now in use?

Tobacco, cocoa, hops, chloral, morphine, laudanum and opium.

3. Which are mild narcotics?

Cocoa and hops.

4. What is cocoa like?

It is a good drink, made from the crushed kernels of the cocoa tree, and is a help to the system, as it both soothes the mind and gives food to the body.

5. What is the hop like?

The hop leaves grow upon a tender vine which looks like the climbing bean. When tea is made from the hop it makes a person sleepy. Hops are used in making beer, and that is one reason why persons who drink beer soon become drowsy.

6. What is chloral?

A liquid* made from alcohol, which causes a person to sleep.

7. Is it good for the person who takes it?

No; if used for a long time it destroys the mind.

8. Is it used very much?

Yes; a great deal. There are hundreds and thousands of persons who are using it all the time. They

* Chloral when purchased is in the crystalline state. The liquid is made by dissolving the salt in water.

take it secretly, because they suffer and wish to sleep, but do not know that they are destroying their minds.

9. What is tobacco?

It is a plant which grows in many parts of our country.

10. How is it used?

It is smoked, chewed and snuffed.

11. How is it used for smoking?

As cigarettes, cigars, and almost like powder for pipes.

12. How is it used for chewing?

As "fine cut" and in cakes.

13. How is it used as snuff?

It is used as a fine powder.

14. How does the use of tobacco affect the system?

When taken for the first time it makes a boy very sick. His head swims, his hands tremble, his knees feel weak, and his stomach becomes so sick that he vomits in spite of himself. He feels weak for several hours, and is ashamed of himself to think he touched the stuff.

15. How are persons affected by the constant use of tobacco?

Those who use it a great deal lose their flesh and grow thin and nervous.

16. Does its use produce any other change?

Yes; the breath becomes strong and sickening, the teeth look yellow, and very often the body and clothes emit so strong an odor of the tobacco as to trouble others.

17. Who use the greatest quantity of tobacco, young, middle-aged or old men?

Young men from the age of eighteen to thirty years.

18. Have they usually much money?

They have not. Most of them are clerks at low salaries.

19. Does the use of tobacco cost them very much?

It does, for the most of them think it no harm to use beer also, and they spend nearly all their money for beer and cigars.

20. Are they able to use enough to consume nearly all of their spare money?

Each clerk spends perhaps a dollar a week for the beer and tobacco which he uses; and, besides, he thinks he must be "a good fellow with the boys," and so should treat the others.

21. How much does the treating cost?

About twice as much as the clerk pays for his own supplies, which takes from him, in all, two or three dollars a week, making from $100 to $150 a year.

22. What injuries are inflicted by "treating?"

Many persons who would not otherwise drink or smoke, do not like to refuse when asked to do so with others. As a result, they injure themselves for fear of offending their friends.

23. Are there any laws against treating?

In some cases there are, as to the use of liquor. Away out in Nevada there is a law that any one who shall treat another to a glass of liquor shall either be fined $50 or put in jail for three months.

24. Is there any other reason for preventing treating?

Yes, men do not drink so much when alone, hence

do not become drunk, and, as a result, do not commit so many crimes.

25. When men smoke does it make them thirsty?

Yes, and if they cannot get water they will use liquor.

26. Does liquor satisfy thirst?

It does not. The more you drink the hotter your throat and stomach become.

27. Do all men who smoke use liquor?

No, but almost all who use liquor do smoke.

28. What is there in the tobacco that makes it so strong and injurious?

It is nicotine, a kind of oil which is found in every kind of tobacco.

29. How strong is this nicotine?

So strong that a single drop placed on the tongue of a dog or cat will kill the animal within a few minutes.

30. Will tobacco alone kill anything?

Yes. It is used to kill the moths which destroy furs

31. If it kills the moths will it not injure persons?

It certainly will.

32. What do the medical works say of tobacco?

They call it a poison.

33. What are the people like who work in tobacco factories, where the air is filled with the vapor from the plant.

They are pale, yellow, sallow looking, and are sickly, being troubled a great deal with headache.

34. How many people are there in the world?

Nearly fifteen hundred millions.

35. How many of them use tobacco?

Eight hundred millions, or more than half.

36. Do medical men condemn the use of tobacco?

Yes; Dr. Drysdale, of England, says that it causes blindness, palpitation of the heart, paralysis, diarrhœa, and diseases of the teeth and tongue.

37. Have we any striking examples of injury to people in our own country from the use of the poisonous plant?

Yes; Hon. W. D. Kelly, Member of Congress from Pennsylvania, suffered for years from a cancer on the tongue. Senator Hill, of Georgia, died only two years ago from the same disease; and Gen. U. S. Grant is now thought to be slowly dying from a cancer on the back part of his tongue—all caused by smoking.*

38. How does the use of it by small boys affect them?

It keeps them from growing.

39. Do careful business men like to see their clerks using tobacco?

They do not. Many business men will not employ a young man who uses it in any way.

40. Are fathers who use tobacco anxious that their sons should either chew or smoke?

They are not. *No one ever seriously advised his child to learn to use tobacco.*

QUESTIONS.

1 What are narcotics?

2. Can you name four kinds?

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* General Grant died July 23, 1885, from the above-named trouble.

3. Can you describe the effects of chloral?

4. How is tobacco used?

5. How does it affect persons when they use it for the first time?

6 Do the persons who use tobacco, constantly, gain or lose in flesh?

7. How does the use of it affect the breath of a man?

8. Why is smoking an expensive habit for a young man?

9. Why is it unwise to offer cigars and liquor to young men?

10. Why do a great many persons who smoke, drink wine and beer?

11. What is the oil of tobacco called?

12. What are the diseases which Dr. Drysdale says are caused by the use of tobacco?

13. What caused the suffering and death of General Grant?

14. Are parents anxious that their children should learn to use tobacco?

XL.—OPIUM.

1. What is opium?

It is a kind of gum obtained in India from a plant called the poppy.

2. How is it used?

Men chew it, smoke it, and also make a drink from it.

3. What is its nature?

It is so strong that we can use but a small amount before feeling its effects.

4. What are the effects?

A short time after it is taken the person begins to feel bright and joyous, his eyes sparkle, and he forgets all his cares.

5. What next takes place?

After a time his eyes lose their brightness and he becomes drowsy, but does not exactly sleep; he dreams and sees strange visions, nods his head and laughs as a child, but is scarcely conscious of anything which is taking place about him.

6. What then follows the dreamy state?

The man falls into a state of stupor and knows nothing for several hours.

7. How does he feel when he awakens from the stupor?

He is weakened and pale; is scarcely able to walk; has the headache, his mouth and throat become dry; he has no appetite, and, for hours, feels dull and stupid.

8. What does the opium eater then do for relief?

He turns back to his pipe and soon feels his entire frame quivering with joy; he again forgets care and trouble and sees visions of bliss before him.

9. How does the continued use of this narcotic affect the health and strength of a man?

He grows weaker day by day, until he becomes almost like a skeleton; his body becomes bent, as with old age; his fingers turn and cut into his hands; he forgets everything except the mad craving for opium, to obtain which he will risk his life.

10. How long does this state last?

Generally until death ends the sufferings of the man.

11. Is it not possible to persuade a man to give up the use of the poison?

Men rarely ever escape from the vice; they try to stop, but the pain is so great that they go back to the opium, and thus continue its use until they become so weak that they lose heart and refuse to give it up.

12. When a man takes opium, does he find that the same amount will satisfy him each time?

No; he finds that the dose must be increased, although he knows that the more he takes the sooner he must die.

13. How long do people live who use the drug constantly?

Dr. Madden, who went to Constantinople to see the opium eaters, says, that as a rule, if they commence to use the poison before they are grown, they die before reaching the age of thirty years.

14. Is the use of opium increasing or decreasing?

It is increasing; the Chinese are bringing it to this country, and they keep what are known as opium dens, or opium hells, in all the large cities.

15. Why should they be called by such terrible names?

Because they seem to destroy both body and soul.

16. By what names do we commonly meet with opium?

As laudanum, morphine, Dovers powders, soothing syrup and paregoric.

17. How and for what purpose are these medicines given?

They are given as liquids, except Dovers powders, and are for the purpose of producing sleep and freedom from pain.

18. What great danger is there in the use of the opium compounds?

The danger is, that in trying to cure children of a slight pain they may be killed by opium poison which is in the soothing syrup, paregoric and other medicines.

19. Have any children been killed by the use of opium compounds?

Yes; Dr. Taylor says (see Taylor on Poisons, page 528), that there is no form of poison so frequent as that by opium and its compounds. He says again, that three-fourths of all the deaths from opium take place among children who are less than five years of age.

20. Does he cite any special instances of death to children from opium poisons?

Yes; he states that in 540 deaths from opium and its compounds, over 400 were among infants and children.

21. How were the children affected after taking the opium mixtures?

They all suffered somewhat in the same way; one person says of them: "The sleeping stuff made them that they were almost always dozing and never cared for food, They pined away, their heads got big, and they died."

22. What is the safe rule in using soothing syrup, paregoric, and all such medicines?

Always ask the family physician for advice on the subject.

23. Why not follow the directions given on the bottles which are sold at the drug stores?

Because some of the medicines change and become stronger the longer they stand.

24. What conclusions did Dr. Johnson, of England, reach after making a careful study of the effects of opium on the human body?

He wrote as follows: "It is certain that opium, like spirituous liquors, produces most melancholy body and soul destroying effects upon those who give themselves up to its use as a narcotic indulgence. If day brings them the bliss of heaven, night brings them the torments of hell."

25. How does the craving for opium compare with that for liquor or tobacco?

The same writer says, that "opium, of all substances is the most wonderfully seductive, and is therefore a most dangerous substance to use. The infatuation sometimes reaches such a point that the certainty of death, and of all the fearful infirmities which in this case precede death, have no influence on the victim."

26. What great lesson should we learn from the study of this wonderful narcotic?

That it is better to suffer pain for a season than to attempt, except at the hands of a physician, the use of a drug which destroys manhood, wrecks the body, and endangers the soul.

General Review.

1. Can you name the principal centres of the nervous system?
2. Describe the brain?
3. How is it protected from injury?
4. Describe the appearance of the nerves in the brain?

5. Can you explain the difference between a voluntary and involuntary movement of the body?

6. Can you name the five senses?

8. How is the brain affected by the use of wine?

8. What is meant by congestion of the brain?

9. Do you know the difference between delirium tremens and insanity?

10. Why do public speakers use wine?

11. Can you state three ways in which the use of wine injures the action of the mind?

12. How may we escape the danger which attends the use of alcohol?

13. Describe the eye?

14. Can you name eight parts which belong to the eye?

15. Which one of the three enveloping coats is of a deep black color?

16. Which one of the parts of the eye looks like a tiny watch crystal?

17. How is the eye protected from injury?

18. What is the difference between one who is near sighted and another who is far sighted?

19. How do persons injure their eyes?

20. Describe the eyes of the hard drinker?

21. What is a jail?

22. How many prisoners were kept in the York (Pa.) jail during the year 1884?

23. How many of them are recorded as being moderate drinkers?

24. What is a moderate drinker?

25. How many of them were under thirty-five years of age?

26. Do medical men advise the use of liquor by those who are exposed to cold, stormy weather?

27. Can you give the names of three physicians who state that the excessive use of liquor does not furnish heat to the body?

28. How did the sixty men, who took a good supply of provisions and liquors, succeed in getting through the winter at Hudson Bay?

29. How did the twenty-two men fare without liquor?

30. When soldiers have been sent into hot countries how have those succeeded who used liquor?

31. What did Sir Charles Napier say, in 1849, of the soldiers who were sent to the hospital at Calcutta?

32. Can you name four narcoties now in use?

33. How does the use of chloral affect the mind?

34. How is tobacco used?

35. How does its use affect the system?

36. Do clerks often use tobacco?

37. Can they afford to do so?

38. Why should young men not treat others to tobacco and liquor?

39. Does smoking make a man thirsty?

40. Do many of the smokers use beer?

41. Do young girls who work in tobacco factories look strong and well?

42. Do you know of any diseases that medical men say are caused by smoking?

43. What killed Senator Hill of Georgia?

44. What is opium?

45. How does the use of opium affect a man?

76. Does a man feel refreshed and satisfied after the use of opium?

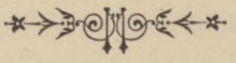
47. Does a man after using opium for a time feel like giving up the use of it?

48. What is an opium hell, and why is the name applied to such a place?

49. Are many children killed by opium compounds?

50. Why is paregoric given to children?

51. Is it safe to give such medicines to the little ones?



PART FIFTH.

THE GENERAL EFFECTS OF STIMULANTS.

PART FIFTH.

XLI.—GENERAL EFFECTS.

1. What have we found to be the appearance of the face when the brain is under the influence of alcohol?

The eyes are restless and the pupils dilated, while the color of the skin varies from a gentle flush to that as red as though it had been burned with fire.

2. Are there any signs which indicate disease?

Yes, the face, instead of being smooth, is, in the case of the regular drinkers, marked with pimples and blotches which indicate that the blood is poisoned.

3. Is the body changed in any other visible way as a result of the use of liquor?

Yes; in the case of those who regularly use malt liquors, as ale or beer, the entire body becomes covered with fat, in the same way that we have found it to grow upon the liver, heart and kidneys.

4. Is the formation of fat an advantage?

It is not, it weakens the system and prevents a man from using his full bodily powers.

5. If the malt liquors produce fat, what are the effects which follow the use of whiskey, brandy and other strong drinks?

As a rule, the men who use them become thinner.

6. Why is it that the malt liquors produce fat while the strong drinks have an opposite effect?

Because the malt liquors hold in solution, sugar, starch, gluten and oil, which are food elements, while the strong drinks are composed of almost pure alcohol and water.

7. Does pure alcohol contain food material?

It does not.

8. Do medical writers name special diseases which are caused by the use of alcohol?

They do assert in the most positive language that a great many diseases are caused by the use of alcoholic stimulants.

XLII.—DISEASES CAUSED BY THE USE OF ALCOHOLIC STIMULANTS.

1. What are the diseases which are said by medical men to result from the use of liquors?

Acidity, heart-burn, pyrosis, irritation of the stomach and intestines, nausea, frequent vomitings, purging, jaundice, cerebral congestion, scirrhus of the stomach, gout, rheumatism, dropsy, diabetes, epilepsy, paralysis, delirium tremens and insanity. (See Taylor on Poison, pp. 607.)

2. Which of these diseases have we thus far considered?

Acidity, irritation of the stomach and intestines, nausea (sick stomach), frequent vomiting, cerebral congestion, gout, rheumatism, delirium tremens, and insanity.

3. What is heart-burn?

It is a burning sensation in the stomach.

4. What is pyrosis?

Inflammation of the stomach, commonly called water-brash.

5. What is purging?

A disease of the bowels.

6. What is jaundice?

A disease in which the eyes and surface of the body become yellow.

7. What is meant by scirrhus of the stomach?

The growth of cancers upon it.

8. What is dropsy?

An unnatural collection of watery liquids in the body.

9. What is diabetes?

A disease of the kidneys, which in many cases ends in death.

10. What is paralysis?

The loss of power. A man when totally paralyzed is unable to move either his hands or feet.

11. Will good insurance companies insure the lives of men who use liquors regularly?

They will not. They have found by experience that the men who drink alcoholic stimulants die much earlier than those who are temperate.

QUESTIONS.

1. Describe the face of the regular drinker.

2. Does the constant use of beer result in the gain or loss of flesh? Why?

3. Is the fat an advantage?

4. Will a man by drinking whiskey become thin or fleshy?

5. Does pure alcohol contain food material?

6. Can you name six diseases which medical writers state are caused by the use of liquor?

7. What is nausea?

8. What is gout?

9. What is heart-burn?

10. What is jaundice?

11. What is dropsy?

12. What is diabetes?

13. What is paralysis?

14. Why will not good insurance companies grant policies to men who use liquor regularly?

XLIII.—ALCOHOLIC LIQUORS.

Discussed by the Philadelphia County Medical Society.

1. Do medical gentlemen often discuss the subject of alcoholic stimulants?

They do. It is considered to be one of the most vital questions of both the present and the future.

2. Do the physicians agree as to the extent to which alcoholic stimulants should be used?

They very naturally differ as to the extent to which they should be used in cases of sickness, but all thoughtful physicians are most firmly united in the view that, for persons in good health, alcoholic stimulants are not necessary, and hence should not be used.

3. What proof may be given in support of the above statement?

The question was discussed at the meeting of the Philadelphia County Medical Society, September 26, 1883, when the following gentlemen stated their views: Drs. Eskridge, Mills, Wood, O'Hara, Tyson, Hamilton, Wilson and Leffman.

4. What did Dr. Eskridge say on the subject?

He said, in addition to many other things: "I am satisfied that persons in health, under ordinary circumstances, do not need an alcoholic stimulant, and, that if its administration is attended by no good results, evil only follows the use of alcohol at such times."

5. What view was presented by Dr. Mills?

He said: "I would not wish to be regarded as an advocate of anything else but temperance in *the best* use of the word. About the evils of the abuse of alcohol no doubt can exist."

6. What view was presented by Dr. Wood?

He said: "I am fully convinced that we *do not* need *alcohol in health*, but the indulgence in it moderately on occasions, is probably no more hurtful than over-eating."

7. What did Dr. O'Hara say on the subject?

He said: "I have learned by experience the evils of too much confidence in alcohol, when I thought it was food, and now watch it closely as a medicine. I recall an instance in which brandy was used for dyspepsia; the patient, it is true, got rid of the dyspepsia, but he complained frequently until the day of his death, which was

caused by liquor, that he had made a bad swap, and would rather have held on to his dyspepsia."

8. What view did Dr. Tyson present?

He cited a case as follows: "I recall a case in which a gentleman was advised by a non-medical friend to use whiskey for dyspepsia. It was tried, and, finding good results from it, he continued using it in small amounts daily; the use was kept up until one day the patient found the bottle empty. He missed his usual dose so greatly that he was forced to realize that he had been drinking, and never used the liquor again. It may be laid down as a rule that it is never safe for physicians to advise the regular use of alcohol for dyspepsia; it may lead to a habitual use of stimulants."

9. What did Dr. Hamilton say?

He spoke both of moderate drinking and of the adulteration of liquors, saying: "Moderate drinking, it must be remembered, is very often the road to *immoderate* drinking. * * * * * * * * * * * * * * * The allusion to the adulteration of wines and strong liquors was deservedly made, but it occurs, doubtless, much more frequently in regard to the finer and more costly than to the cheaper liquors, and the perfection to which this adulteration has attained is simply notorious."

10. What was said by Dr. Wilson?

He said: "Respectable medical men are not lax in their attitude on this question, but are accustomed to caution their patients in regard to the dangers of the use of alcohol."

11. What quotation may be made from the views of Dr. Frank Woodbury?

The following: "In large doses every one admits that it is capable of destroying life by its own properties when taken into the system, and it is therefore a poison. Its use in much smaller doses may not prevent the enjoyment of long life; but in many cases its constant use *directly induces disease* and *tends* to *shorten life*."

12. What did Dr. Leffman say in closing the discussion? *

"It is the habit of *moderate* drinking *in health* that makes *drunkards*. * * * * * * * * * * * * The whole question, it seems to me, is a most important one. The terrible effects of alcohol are seen in all directions, and if the restriction of it is needed—and I don't see how any one can doubt the fact—such restriction must only come by active assistance of those who know the facts best. It will never do to temporize with vice."

13. What may be said to be the result of the discussion?

That the gentlemen, without exception, condemn the regular use of alcoholic stimulants by those who are in health.

14. What are the four conclusions concerning alcohol, which were adopted by the International Medical Congress in 1876? †

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* For the full report of the discussion of alcohol by the above-named members of the Philadelphia County Medical Association see *The Philadelphia Medical Times*. Vol. XIV, No. 416.

† The International Medical Congress is composed of the *most learned* and *distinguished* physicians of the *world*.

They are:

1. *Alcohol is not shown to have a definite food value* by any of the methods of chemical analysis or physiological investigation.

2. Its use as a medicine is chiefly that of a cardiac stimulant, and *often admits of substitution.*

3. As a medicine, it is not well fitted for self-prescription by the laity, and the medical profession is not accountable for such administrations, or for the enormous evils arising therefrom.

4. The purity of alcoholic liquors is, in general, not as well assured as that of articles used for medicines should be.

QUESTIONS.

1. When and by whom was the subject of alcoholic stimulants discussed in Philadelphia?

2. Can you name four of the physicians who took part in the discussion?

3. Can you give the view of Dr. Eskridge?

4. What did Dr. O'Hara say about the man who took brandy for dyspepsia?

5. Do you remember what Dr. Tyson stated about another man who took whiskey to cure dyspepsia?

6. What did Dr. Hamilton say about adulterated liquors?

7. Did Dr. Frank Woodbury state that the use of alcohol tends to lengthen or shorten life?

8. What did Dr. Leffman say about vice?

9. Did any of the gentlemen advise young men to commence the use of wine, beer or liquor of any kind?

10 Can you give the four conclusions concerning alcohol adopted by the International Medical Congress in 1876?

11. Of whom is the International Medical Congress composed?

XLIV.—STUDY AND STIMULANTS.

1. Have we any testimony from prominent literary men concerning the effects of alcoholic stimulants and narcotics upon the mind?

Yes; a valuable work called "Study and Stimulants," has recently been published by Lippincott & Co. of Philadelphia, giving the personal experience upon this subject of more than one hundred of the most celebrated writers throughout the world.

2. Who are some of the writers?

Mr. W. D. Howells, Dr. Louder Brunton, Prof. J. S. Blakie, Rev. Cannon Farrar, Sir. William Thompson, Dr. B. W. Richardson, Dr. Dio Lewis, Mr. George Augustus Sala, Mr. O. W. Holmes and Mr. W. C. Bryant.

State the views of the above named gentlemen?

"When I take wine I think that it weakens my work, and my working force the next morning." (W. D. Howells.)

"As far as my experience goes, wine is a clog to the pen, not an inspiration. I have never seen the time when I could write to my satisfaction after drinking even one glass of wine." (Mark Twain.)

"My idea is that work done under any kind of stimulants is unhealthy work, and tends to no good. As to

smoking, generally it is a vile and odious practice; but I do not know that when not carried to excess, it is in any way unhealthy." (J. S. Blakie.)

"The evidence is all perfect that alcohol gives no potential power to brain or muscle. During the first stage of its action it may enable a wearied or a feeble organism to do brisk work for a short time; it may make the mind briefly brilliant; it may excite muscle to quick action, but it does nothing substantially, and fills up nothing it has destroyed, as it leads to destruction. A fire makes a brilliant sight, but leaves a desolution. It is the same with alcohol." (B. W. Richardson.)

"I prefer an entirely undisturbed and unclouded brain for mental work, unstimulated by anything stronger than tea or coffee, unaffected by tobacco or other drugs." (Oliver Wendell Holmes.)

"My drink is water, yet I sometimes, though rarely, take a glass of wine. I am a natural temperance man, finding myself rather confused than exhilarated by wine. I never meddle with tobacco, except to quarrel with its use." (W. C. Bryant.)

"I will tell you who can't take alcohol, and that is very important in the present day. Of all the people I know who cannot stand alcohol, it is the brain-workers." (Henry Thompson.)

3. Who writes that wine is a clog to the pen?

4. Who says that wine weakens his working force?

5. What does Dr. Blakie say regarding unhealthy work?

6. What does Dr. Richardson say about fire and alcohol?

7. What does Oliver Wendell Holmes say about an unclouded brain?

8. What conclusion is reached by the aid of this work?

Out of 124 prominent men mentioned in "Study and Stimulants," not one *advises* the use alcoholic stimulants, while very many condemn the use of them as being exceedingly injurious to both mind and body.

9. What is the conclusion concerning the use of tobacco?

The majority of the gentlemen condemn the practice, although some defend it, but no one advises young persons to commence it.

10. How many scientific men sent their views on the subject of the use of tobacco?

Twenty.

11. How many of them smoke?

Only two.

12. What does the editor of "Study and Stimulants," say of the use of tobacco by young men?

"To young men tobacco is bad in any form. It poisons their blood, stunts their growth, weakens the mind, and makes them lazy."

13. What has been the experience at the government schools?

The military officers at Annapolis and West Point have found the above named effects to be true upon the young men who are in training at those places, and therefore the Government has forbidden the use of tobacco at both institutions.

14. What has been the history of tobacco at Harvard University?

Dr. Dio Lewis of Harvard says that *no tobacco* user has *ever taken* the *first honor* at that University.

15. What has been the experience in the Old World?

It has been found that in the colleges there, those who have used tobacco have not ranked as high in scholarship as those who abstained from its use.

16. Why should not those who use tobacco rank as high in scholarship as the others?

It is thought that when tobacco is used by young men, who have not attained their growth, that it dulls the mind, and thus prevents them from succeeding as well as their companions who do not use the poisonous weed.

17. What does Mr. George Augustus Sala say of tobacco, after using it for forty years?

"As to smoking stupefying a man's faculties or blunting his energy, that allegation I take to be mainly nonsense. The greatest workers and thinkers of modern times have been inveterate smokers. At the same time, it is idle to deny that *smoking to excess weakens the eyesight, impairs the digestion, plays havoc with the nerves*, and *interferes* with the *action of the heart.** I have been a constant smoker for nearly forty years; but had I my life to live over again *I would never touch tobacco in any shape or form.*

QUESTIONS.

1. What is the nature of the work called "Study and Stimulants?"

2. Can you name four of the gentlemen mentioned in it?

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* It is very difficult to conceive of a man doing good brain work while suffering as Mr. Sala describes.

3. Does Mr. Howells state that wine strengthened or weakened his work?

4. What does Mark Twain* state about even one glass of wine?

5. What does Prof. Blakie state about work done under any kind of stimulus?

6. Can you state what Dr. Richardson says about the action of alcohol on the mind?

7. What kind of brain does O. W. Holmes say he prefers?

8. What does Mr. W. C. Bryant say about his plan with tobacco?

9. Who does Mr. Henry Thompson say cannot stand alcohol?

10. Do any of the writers advise young men to either smoke or drink?

11. What does Mr. A. E. Reade say of the use of tobacco by young men?

12. What action has been taken by the Government concerning the use of tobacco by cadets at Annapolis and West Point?

13. How many smokers at Harvard have taken the first honors at that university?

14. How does Mr. George Augustus Sala say the use of tobacco affects the eye-sight, digestion, nerves, and heart?

XLV.—ADULTERATED LIQUORS.

1. In our study thus far of the effects of alcoholic drinks upon the human system, have we taken for granted that the liquors were pure or impure?

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* Mr. S. L. Clemens.

No reference has been made to any kind except pure alcoholic liquors.

2. What results have we found to follow the use of such drinks?

They produce the greatest injury to both mind and body.

3. What is meant by adulterated liquor?

That which contains impurities.

4. Are the alcoholic liquors adulterated?

They are. It is almost impossible to find pure liquors.

5. What are the substances used for adulterating liquor?

Roots, seeds, onions, juniper berries and snuff, besides copperas, nitric acid, sulphuric acid and other chemicals.

6. Do these substances, when added to alcoholic drinks, make them better or worse?

They make them worse.

7. Why then are they added to liquors?

Roots, seeds, pepper, cocculus indicus, and other materials are added to beer to make it bitter, while some acids are added to wines to change their color, and others are used with strong drink to cheapen the cost of it.

8. What effect does the adulterated beer have upon the system?

It sickens the stomach, and when taken in excess, drugs a person so that he becomes drowsy and finally loses consciousness.

9. Why should acid be added to wine to change the color?

In order to make it look older and better.

10. How does the addition of acid cheapen the cost of liquor?

A quart of strong sulphuric acid, worth twenty-five cents, with a little coloring matter, added to a keg of wine or brandy will make a barrel of what is called liquor, which may then be sold at a profit of more than a hundred dollars.

11. Do chemists often find such acids in alcholic drinks?

They do, and especially in the liquors used in the saloons where laboring men resort.*

12. What is the nature of the sulphuric acid, which is said to be used so commonly to adulterate liquors?

It is a deadly poison, which is so strong that it is often used to dissolve bones, in order to make bone-phosphate, a material used to enrich the soil.

13. How does it affect the body?

Owing to its strength, it tends to produce inflammation of the stomach, and thus helps alcohol to carry a man down to an early grave.

14. What great lesson should be learned from this percentage of the poisons found in wines and strong liquors?

That very many of the alcoholic stimulants now in use and given to invalids, even by the advice of physicians, are so poisonous that instead of helping the sufferers they either keep them sick longer, or cause death where otherwise lives might be saved.

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* The writer has since April 1, 1885, examined ten samples of sherry wine, and found sulphuric acid in nine of them.

XLVI.—THE CHILDREN OF DRUNKARDS.

1. Are the children of those who use alcoholic liquors, to excess, different in any respects from their companions whose parents abstain from the use of stimulants?

Yes. We have found that by the use of liquor the parents lose their strength, and it is known that the children inherit their weakness.

2. Name three respects in which the children of constant liquor drinkers differ from those of earnest, hard-working and temperate people?

In the first place, their minds are duller; in the second, they are weaker in body; and in the third, they are cast down by the disgrace which attends the vice of their parents.

3. Why is it thought that the minds of such children are weaker than those of others?

Because the children of hard drinkers very rarely take a high grade in the classes of either the common schools or institutions of a higher order.

4. Is there any other reason for stating that the children of drunkards are weak in mind?

Yes. It is quite common for children to be found in such families with minds so feeble that they are called idiots.

5. Why is it that the children of drunkards are not so strong as those of temperate parents?

Because children are like their parents. They look like them, act like them, and live like them; therefore by such fathers and mothers, who have poisoned and almost

destroyed their bodies with liquor and narcotics, poor, sickly, wretched children are raised to add to the sadness and crime of the world.

6. Why should it be said that such sickly persons add to the crime of the world?

Because it is a sad, but well-known fact, that the children of drinking parents inherit a natural taste for liquor, and having but little strength with which to resist, they yield to temptation, commence drinking, and soon commit worse crimes than their fathers did before them.

7. Is it possible to cite any direct medical testimony in support of the statement that it is common for drunkards to raise idiot children?

Yes; Dr. W. B. Carpenter says in his Mental Physiology * that Dr. Howe, in his Report on the Statistics of Idiocy in Massachusetts, states that the habits of the parents of three hundred idiots, having been learned, one hundred and forty-five, or nearly one-half were found to be habitual drunkards. In one instance in which both parents were drunkards seven idiot children were born to them.

8. What did Dr. W. A. F. Browne, of Scotland, write when he had charge of a large asylum?

"The drunkard not only injures and enfeebles his own nervous system, but entails mental disease upon his family. His daughters are nervous and hysterical; his sons are weak, wayward, eccentric, and sink under the pressure of excitement of some unforeseen exigency, or the ordinary calls of duty."

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* See page 370.

9. What did Dr. Howe also write concerning taste and desire for stimulants?

"The children of drunkards are deficient in bodily and vital energy, and are predisposed by their very organization to have cravings for alcoholic stimulants. If they pursue the course of their fathers, which they have more temptation to follow, and less power to avoid, than the children of the temperate, they add to their hereditary weakness, and increase the tendency to idiocy or insanity in their constitution, and this they leave to their children after them."

10. Are the drunken parents then responsible for the misery and crime of their children?

They are, indeed, in a great measure; and at the judgment bar of God will be called to render an account for the vice which they fostered in themselves, and the suffering and distress which they heaped upon others.

11. Did the persons, who are now confirmed drunkards, ever suppose when they began to drink, that they would end their lives in this way?

They did not. They expected to be only moderate drinkers.

12. What did Dr. Leffman of Philadelphia say at the Medical Society concerning moderate drinking?

He said that "it is the habit of moderate drinking in health that makes drunkards."

QUESTIONS.

1. Have we found that pure alcoholic stimulants help or injure the body?

2. What are adulterated liquors?

3. Is it now easy to obtain pure liquors?

4. Name six substances in use for the adulteration of liquors?

5. Why do men adulterate liquor?

6. Does beer which is adulterated make a person feel brighter or duller?

7. What was found in the sherry wine in York?

8. Can you describe sulphuric acid or tell any purpose for which it is used?

9. How would the use of such wine affect an invalid!

10. How do the children of drunkards differ from others?

11. Have such children clear minds?

12. Are children usually like or unlike their parents?

13. Are the drunkards' children more or less liable than others to fall when tempted to commit a crime?

14. What does Dr. Howe write concerning the taste and desire on the part of such persons for stimulants?

15. What did Dr. Leffman state to be the cause of drunkenness?

XLVII.—WINE FOR THE STOMACH'S SAKE.

1. What excuse do a great many persons give for their constant use of wine?

They say that the Apostle Paul wrote to Timothy to take wine for his stomach's sake.

2. Did the Apostle so advise Timothy?

He did.

3. Do the persons who make this excuse usually quote the entire verse which contains the advice!

They do not. Very few know the remainder of the sentence.

4. What are the exact words of the verse?

Drink no longer water, but use a little wine for thy stomach's sake and thine often infirmities. I Tim. v; xxiii.

5. What then do we find concerning the statement which men thus quote so frequently?

They omit both the first and last part of what Paul says, and obtain their excuse by taking only a part of one sentence.

6. Was Paul well acquainted with Timothy when he wrote this advice to him?

Yes; he had known him for years, and at that time looked upon him as a son.

7. What do we find by looking carefully at the message which he sent to Timothy?

We find that he told Timothy both how to take the wine and explained why he advised its use.

8. What is the meaning of the clause "drink no longer water?"

It is stated by learned writers on the Scriptures to mean: Drink not water only, but add a little wine to it. (See Barnes.)

9. Why did Paul advise this?

It is said that Timothy was a young man who would not touch wine on any account, but that Paul knowing his bodily condition, suggested that it would be wise to use it.

10. How much wine did he say to take, and why was it to be used?

He said, "Use a *little* wine for thy stomach's sake and thine often infirmities."

11. What is the meaning of the clause "For thy stomach's sake and thine often infirmities?"

It shows that the stomach of Timothy was out of order, and that he was subject to frequent attacks of pain or weakness.

12. Did Paul then write to Timothy to use wine for pleasure?

No. It was to be taken solely as a medicine.

13. If Paul and Timothy were alive at this time would the former probably advise the use of wine?

He would not.

If they were alive, and Paul were to try and use some of the vile poison which is now selling as wine, he would write another epistle to Timothy and charge him never again to touch wine, *especially for his stomach's sake.*

14. Who was the wisest man the world has ever known?

King Solomon.

15. What did he write concerning the use of wine?

Who hath woe? who hath sorrow? who hath contentions? who hath babbling? who hath wounds without cause? who hath redness of eyes? They that tarry long at the wine; they that go to seek mixed wine. Look not thou upon the wine when it is red, when it giveth his color in the cup, when it moveth itself aright. At last it biteth like a serpent, and stingeth like an adder. Prov. xxiii; 29-32.

16. What are the rewards of an active temperate life?

Health, home, friends, peace, respect, honor and countless joys.

17. What are the results of a careless, intemperate life?

The loss of health, home, friends, peace, respect, and honor; and further, the intemperate man, instead of having countless joys, drags through a life of shame, disgrace, drunkenness and ruin.

18. What should a thoughtful youth do to succeed in life?

He should seek the guidance of our Heavenly Father and strive earnestly to obtain the rewards of a temperate and virtuous life.

Final Review.*

Part First.

1. Of what does physiology treat?

2. Can you state four ways in which an animal differs from a plant?

3. Do you know four ways in which man differs from the other animals, such as horses and cattle?

4. What are the names of the three great divisions of the human body?

5. Are the heart and lungs in the chest or abdomen?

6. Do you know whether the greater part of the body is composed of solid or liquid substances?

7. How many bones are there in the human body?

8. Do you know whether the bones are formed chiefly of lime, iron or salt?

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* To Teachers.—The final review should be as thorough as possible.

9. When the bone of a child is broken, how long does it require for the parts to grow together again?

10. How many teeth should five-year-old children have?

11. What are the vertebræ?

12. Are the true ribs above or below the false ones?

13. Are the bones in the wrist called the carpal or tarsal bones?

14. Which part of the leg is called the lower leg?

15. Are the long bones of the arms and legs solid or hollow?

16. What is the difference between the spinal cord and the spinal column?

17. Is the skin composed of one or two layers of matter?

18. Can you explain the difference between a muscle and a tendon?

19. Where are some of the principal muscles located?

20. What is a joint?

21. Can you describe the ball and socket joint?

22. Do you know whether there are any bones which grow together as a person advances in years?

23. How are the bones held together at the joints?

24. Where the ends of the bones meet are they supplied with any kind of oil or liquid to keep them moist?

Part Second.

25. Of what does Hygiene treat?

26. Can you write three good rules which should be followed in order to develop and strengthen the body?

27. What is the difference between necessary and luxurious food?

28. Can you name six substances which help to form the human body?

29. Is the iron found in the blood, flesh or bones?

30. Is water composed of oxygen and hydrogen, or oxygen and carbon?

31. Do you know how much water there is in the human body?

32. Do you know whether the egg is composed of albumen, starch or fat?

33. Can you tell why we require starch and sugar as food?

34. What would be the effect upon a person if he were to stop using salt?

35. Should a person live on animal or vegetable food?

36. Do the people in Russia use more or less fat food than in Italy? Give a reason for your answer.

37. What is the best liquid, for strength, to drink? Why?

38. How do persons injure themselves with ice water?

39. Can you name six kinds of food which are good for sick persons?

40. Do thoughtful persons use alcohol as food?

41. Why should persons bathe?

42. If a person should not take a bath for a month would the pores of his skin be open or closed?

43. Why should boys not remain in the water for two hours at a time?

44. What is sometimes a cause of the cramp which troubles swimmers?

45. Do persons usually lay aside their winter clothing too early or late in the spring?

46. What does Dr. Carl Seiler say about wrapping the neck in winter?

47. What risk is there in remaining in school or church when the feet are wet?

48. When a man does not use his arms do they become stronger or weaker?

49. Why is a farmer stronger than a merchant?

50. Why should a man wait an hour or two after a meal before engaging in hard work?

51. Which would be better for a person with weak arms, to chop wood or spend the same time in walking?

52. Which is better, to exercise in the house or in the open air? Why?

53. What is taught in a gymnasium?

54. Why is roller skating a dangerous exercise?

55. Why is it wise to spend at least eight hours of the day in sleep?

56. Why do our houses not contain pure air?

57. What is the name of the gas which is thrown from the lungs?

58. Why is it that when a church is full of people, a great deal of coughing is heard?

59. How should bed-rooms be ventilated?

60. Can you think of a good plan for supplying a school-room with fresh air?

61. Are public buildings usually well ventilated?

Part Third.

62. What are stimulants?

63. Can you name four kinds of mild liquor?

64. Do you know the difference between a stimulant and a narcotic?

65. Do you know the difference between wine and whiskey?

66. Can you explain the chemical change which takes place when cider ferments? What is formed besides alcohol?

67. Can you describe alcohol?

68. Upon what does the strength of any wine depend?

69. What does it mean when we say that brandy contains about 50 per cent. of alcohol?

70. What is malt liquor?

71. What great risk is there in using wine in cases of sickness?

72. Can you name four kinds of strong drink?

73. From what is rum made?

74. Did the men who now use whiskey commence by using mild or strong liquor?

75. Can you name four internal organs which are injured by the use of alcoholic stimulants?

76. Describe the stomach.

77. Through which organ does the food pass from the mouth to the stomach?

78. Can you explain how the food is digested?

79. What is chyme?

80. What is the pylorus or gate-keeper?

81. State three ways in which alcohol injures the stomach?

82. How is an inflamed stomach affected by the use of alcohol?

83. How is the liver changed by the use of liquor?

84. What is the hob-nailed liver?

85. What is known to be one of the principal causes of Bright's disease?

86. What is the cause of gout?

87. Can you name any of the substances which help to form the blood?

88. Can you describe the circulation of the blood?

89. Is the blood of a purple color when it passes through the arteries?

90. How many quarts are there in the human system?

91. Do you know how many times the heart beats per minute?

92. How much blood passes through the heart at each beat?

93. Do you know whether it passes through the heart quietly or by spurts?

94. When an artery is cut how should the flow of blood be stopped?

95. Why may the blood be called the life of the body?

96. How does the use of alcoholic stimulants injure the heart and blood?

97. How may it be shown that alcohol overworks the heart?

98. Why do many drunkards die suddenly?

99. Can you describe the lungs?

100. How many air cells do they contain?

101. Explain the changes which take place when we breathe.

102. How many times do we breathe per minute?

103. Does a boy breathe faster when running or walking?

104. Can you explain how the lungs aid in producing heat?

105. How is the heat carried from the lungs to the other parts of the body?

106. How is the breath of a man affected by the use of strong drink?

107. What does Dr. H. N. Martin of the Johns Hopkins University say of alcohol as a whip?

Part Fourth.

108. What are the principal parts of the nervous organization?

109. Describe the brain?

110. How much does the brain weigh?

111. Is the cerebrum the name for the large or small brain?

112. What do the nerves of the brain look like?

113. What is the mind?

114. What are the voluntary movements of the body?

115. Can you name four involuntary movements of the body?

116. What is the effect of alcohol on the mind?

117. Describe the appearance and actions of a man when intoxicated?

118. What is the cause of delirium tremens?

119. Are persons who become insane from the use of liquor quiet and gentle or violent and dangerous?

120. Are men always able to stop drinking when they wish to do so?

121. What excuse do public writers and speakers give for using stimulants.

122. How does the drinking man change in his disposition?

123. Describe the eye.

124. What are the colors of the iris?

125. When is a man near-sighted?

126. What is the difference between the appearance of the eyes of a man who uses opium and one who does not?

127. How is alcohol responsible for the sickness of people?

128. What has the use of liquor to do with crime?

129. What record concerning the prisoners is kept in jails?

130. How many prisoners were recorded in the York (Pa.) jail in 1884?

131. How many were recorded as being moderate drinkers?

132. Of the two hundred and fifty-six prisoners how many were under twenty-one years of age?

133. How many of them had received a good education?

134. Is the use of alcohol an advantage or disadvantage to those who are exposed to continued cold?

135. What proof is there for the assertion that it is a disadvantage?

136. How long did Dr. Richardson study and experiment

in order to determine whether the use of it increased or decreased the temperature of the body?

137. Give the experience of the men who tried the use of alcohol in the polar regions?

138. What advice did Sir Charles Napier give to the soldiers of the 96th Regiment at Calcutta, concerning the use of alcohol in that hot climate?

139. What are narcotics? For what are hops used?

140. How is the mind of a person affected by the continued use of chloral?

141. How is tobacco used?

142. How are persons affected when they use tobacco for the first time?

143. Name three injurious effects which the use of tobacco produces upon young persons?

144. What is there in tobacco which makes it poisonous?

145. What does Dr. Drysdale, of England, say of tobacco?

146. What caused the cancer upon the tongue of Gen. Grant?

147. Are parents desirous that their children should learn to use tobacco?

148. What is opium?

149. Name the three principal ways in which it is used?

150. How are men injured by its use?

151. When persons commence to use opium before they are grown how long do they live?

152. Can you name four medicines which contain opium?

153. What does Dr. Taylor say of the deaths among children from opium compounds?

154. Why is it necessary to ask the family physician how to use such medicines?

155. Why is the use of opium more dangerous than that of other narcotics

PART FIFTH.

156. How do those who use malt liquors change in form after so doing?

157. Is the fat which the malt liquors produce a sign of health?

158. Can you name eight diseases which are caused by the use of alcohol?

159. Do you understand the nature of the following diseases: heart-burn, jaundice, dropsy, paralysis, and cancer of the stomach?

160. When did the gentlemen of the "Philadelphia County Medical Society" discuss the use of alcoholic stimulants?

161. Who were some of the gentlemen who took part in the discussion?

162. Did any of them advise the use of alcohol by persons in good health?

163. What was the experience of the man who took whiskey to cure the dyspepsia?

164. What did Dr. Leffman say concerning moderate drinking?

165. Can you give the four conclusions concerning alcohol which were adopted by the International Medical Congress in 1876?

166. Of whom is the International Medical Congress composed?

167. Can you name six of the most prominent writers of the world who have expressed their views concerning stimulants and narcotics?

168. How did Dr. Richardson compare alcohol to a fire?

169. Who said that the brain-workers cannot stand alcohol?

170. How does Mr. A. E. Reade say the use of tobacco affects young men?

171. What did Dr. Dio Lewis say concerning tobacco and the first honor at Harvard University?

172. What did Mr. George Augustus Sala say of tobacco after using it for forty years.

173. What is adulterated liquor?

174. Name four materials which are used to adulterate liquor?

175. What was found in sherry wine in York, Pa.?

176. Is sulphuric acid harmless or poisonous?

177. How do the children of drunkards differ from others?

178. Why is it thought that their minds are weak?

179. Why are the children of drunkards not so strong as others?

180. How do they add to the crime of the world?

181. Are the children of drinking parents more or less inclined to drink than others?

182. How many drunkards did Dr. Carpenter say there were among the parents of 300 idiots in Massachusetts?

183. What did Dr. Browne, of Scotland, say concerning the drunkard and his children?

184. Should the men who now use liquor be held responsible for the pain they cause to others?

185. What do men state that the Apostle Paul wrote to Timothy?

186. What did he really write?

187. How much wine did Paul say to use?

188. Why was it needed?

189. Does this look as though Paul advised Timothy to take wine for pleasure, or on account of necessity?

190. If Paul and Timothy were alive now, and the former should try to use the wine which is selling, what would he write to Timothy?

191. Who was King Solomon?

192. Can you repeat what he wrote about the wine drinkers?

193. What are the rewards of a virtuous and temperate life?

194. How may true success in life be attained?

TO STUDENTS.

You will derive both pleasure and benefit from the exercise if you will try to dissect the eyes, ears, heart and lungs of rabbits, squirrels, and other small animals.

It will be an excellent plan for you to keep notes of what you try to do with each organ.

Take an eye and find each part of it. Remove as many parts as possible, and place them on a paper, side by side.

Make in addition a little extra study of the eye, and find the meaning of the terms myopia, hyper-myopia, and astigmatism.

By studying other organs systematically in like manner, you will obtain a great deal of valuable information.