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# A STUDY GUIDE FOR A COURSE IN SENIOR HIGH SCHOOL HEALTH

By

C. H. Robinson

A Thesis Submitted
in Partial Fulfillment
of the Requirements for the Degree
Master of Arts in Education

University of New Mexico

1939

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This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of the University of New Mexico in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

Geo. P. Hammond
DEAN

June 3/39
DATE

Thesis committee

S. G. Hanninga
CHAIRMAN

J. W. Diefendorf

Philip H. DuBois
S. Pr.

60610

TABLE OF CONTENTS


| CHAPTER | | PAGE |
|---|---|---|
| I. | INTRODUCTION . . . . . | 1 |
| | Statement of the problem . . . . . | 3 |
| | Delimitations and definitions of terms used. | 3 |
| | Source of data . . . . . | 4 |
| | Organization of remainder of thesis. . . . . | 4 |
| II. | THE DEVELOPMENT OF THE WORKBOOK IN AMERICAN EDUCATION . . . . . | 6 |
| | Review of the literature . . . . . | 6 |
| | Types of workbooks. . . . . | 8 |
| | Functions of the workbook . . . . . | 9 |
| | The place of the workbook . . . . . | 11 |
| | Workbook criteria . . . . . | 12 |
| | Arguments pro and con . . . . . | 14 |
| | The necessity for careful investigation. . . | 16 |
| | Review of study guides in health . . . . . | 22 |
| III. | STUDY GUIDE FOR A COURSE IN SENIOR HIGH SCHOOL HEALTH . . . . . | 23 |
| | To the student . . . . . | 24 |
| | Sheet for graphing score . . . . . | 25 |
| | To the teacher . . . . . | 26 |
| | Instructions for using the study guide . . . | 29 |
| | The problems of healthful living . . . . . | 31 |
| | The cells of the body . . . . . | 34 |

CHAPTER PAGE

Tissues as building materials . . . . . 36
Building good tissues . . . . . 40
Organs formed from tissues. . . . . 42
The skeleton framework of the body. . . . . 45
Hygiene of the skeleton . . . . . 47
The muscles as the motor machinery of the body . . . . . 49
The muscles in action and the hygiene of exercise . . . . . 52
Food and its uses . . . . . 55
The digestion of food . . . . . 58
The hygiene of nutrition . . . . . 63
The circulation of the blood . . . . . 66
The circulation of the blood (concluded) . . 70
The respiration . . . . . 73
The nervous system . . . . . 76
Hygiene of the nervous system . . . . . 80
Sensation and the special senses . . . . . 82
Some special regulative processes . . . . . 85
Bacteria, protozoa, and disease . . . . . 89
The effect of alcohol and tobacco . . . . . 93
Health problems of the machine age . . . . . 95
The modern view of health . . . . . 97
Bibliography . . . . . 98

# CHAPTER I

## INTRODUCTION

The workbook in American education is a fairly recent development. The Thirtieth Yearbook of the National Society for the Study of Education, published in 1931, gives a very comprehensive discussion of the various problems and phases of textbooks but does not mention the workbook. Yet this book was published several years after the writer had used workbooks in his classes, and after workbooks had come into somewhat general use all over the United States. Perhaps the committee which compiled the Thirtieth Yearbook was fully aware of the workbook but thought the movement was of too recent origin for the committee to make an evaluation at that time.

Recognition of the workbook by the Education Index, which lists new workbooks as they are published, was made in January, 1931, when the first article under this heading appeared in its pages.[1]

> It seems evident that the school executives who, in large numbers, have adopted or have considered the adoption of workbooks in the past few years, have had

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[1] T. V. Goodrich, "Is the Workbook a Necessity or a Luxury," School Executives Magazine, 50: 359-61, April, 1931.

to rely almost entirely on their own judgment or on that of their teachers and assistants.

Although formal recognition of the workbook was not given by educators generally, this study by Goodrich reveals that the workbook had come into such wide use that its existence could no longer be overlooked. The number of different subjects in which workbooks were being used in 220 schools reporting to Goodrich's inquiry is shown in the following table:[2]

In 24 schools workbooks were used in 1 subject.
In 42 schools workbooks were used in 2 subjects.
In 51 schools workbooks were used in 3 subjects.
In 36 schools workbooks were used in 4 subjects.
In 24 schools workbooks were used in 5 subjects.
In 9 schools workbooks were used in 6 subjects.
In 4 schools workbooks were used in 7 subjects.
In 6 schools workbooks were used in 8 subjects.

Today almost every secondary school subject is being taught through a workbook in many of our schools. Its rise has been phenomenally rapid; whether or not it is here to stay we cannot venture a guess, but it is the writer's opinion that the workbook has not as yet reached the crest of its popularity as a teaching device, and that any improvement or addition to the workbook is an indication of keeping in step with educational movement of unprecedented popularity.

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[2] T. V. Goodrich, "Is the Workbook a Necessity or a Luxury," School Executives Magazine. 50: 359-61, April, 1931.

## STATEMENT OF THE PROBLEM

Since the workbook is a comparatively recent development, it is advisable to give a comprehensive review of its inception, growth, and acceptance. Conservatives are inclined to look askance upon innovations in every field, and as this is particularly true in the field of education, widely differing opinions have been presented in my discussion of the problem.

Since a workbook has not been available in the field of senior high school health, it appears to the writer that one should be compiled. This study represents an attempt to compile and organize the material for students studying the subject in the senior high school.

## DELIMITATIONS AND DEFINITIONS OF TERMS

This work is limited to a course in senior high school health, based upon the text, HEALTHFUL LIVING by Jesse Fiering Williams, Professor of Physical Education, Teachers College, Columbia University, New York City.

The term "health" is used to designate a course in physiology and health usually taught in the junior year of the senior high school. This study guide in health is based on the essentials of human physiology.

The term "study guide" is used synonomously with the term "workbook." The term "workbook," to many people,

indicated merely busy work to be done by the student. The writer prefers the term "study guide", since it denotes work to be done by planning and evaluation.

## SOURCE OF DATA

The material used in chapter two was compiled from reading all available literature on workbooks. The material in chapter three is based upon the text HEALTHFUL LIVING, by Jesse Fiering Williams. Many other texts in this field were reviewed. Workbooks in various subjects were carefully studied from the standpoint of content, form, makeup, student appeal, and adaptability to teacher needs.

## ORGANIZATION OF THE REMAINDER OF THE THESIS

The development of the workbook in American education is treated in chapter two. This discussion opens with a review of workbook literature, which traces its growth from the simplest written exercise down to its present sophisticated form. The modern workbook is classified according to type, according to various authorities on the subject. Its function and place in the educational system are taken up.

The foregoing topics, which are more or less factual, are followed by a discussion of criteria for judging the workbook, and arguments for and against its use. Since there is such a wide divergence of opinion regarding the

fundamental soundness of the workbook as a student aid, the necessity for its careful consideration is discussed at some length. Closing this chapter is a brief review of study guides in health.

Chapter three is a study guide for senior high school health based upon the text HEALTHFUL LIVING by Jesse Fiering Williams. In this study guide, an attempt has been made to incorporate the best features of the workbooks reviewed. The questions, based upon content material of the text, include true-false, identification, matching, completion, multiple choice, and discussion or essay type.

## CHAPTER II

## THE DEVELOPMENT OF THE WORKBOOK IN AMERICAN EDUCATION

### REVIEW OF THE LITERATURE

The workbook is in all probability a development of the old laboratory manual which has been in use in the various fields of science for many years. These laboratory manuals were prepared to accompany textbooks in the biological and physical sciences and outlined the experiments to be performed by the students of the class in which they were used. Many manuals contained suggestions to guide the students in their work, a large number of references, and and "unlimited opportunity for personal discoveries."[3]

Since the laboratory manuals were serving such a useful place in the fields of science, it was natural that their use should be extended to other fields as well. consequently, there has been developed a large number of labroatory manuals, or workbooks, as they are now commonly called, to accompany textbooks in other fields of high school work. Their development has been so extensive that today practically all phases of high school work are covered by the workbook. This statement can be verified by an

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[3] J. D. Unstattd, Secondary School Teaching (Ginn and Company, 1937), p. 177.

inspection of the catalogues of such publishing houses as Allyn and Bacon; American Book Company; Scott, Foresman and Company; and Ginn and Company.

Two factors have been largely responsible for the spread of the workbook: larger classes and the emphasis placed upon supervised or directed study in the high schools of the United States. Larger classes are due first to the general spread of education in the United States. Today sixty-five per cent of the population of high school age is in school. Wendell Vreeland states that the day of the one-room school is passing.[4] Fifty percent of our population is concentrated in cities of more than 8,000 population. This centralization of population has resulted in crowded schools and accounts for the gradual tendency toward assigning larger and larger classes to the individual teacher. The evidence accumulated from the many experiments conducted in recent years to determine the relative efficiency of instruction in large and small classes, has not been unfavorable to the former. The guide sheets were the outcome of the first efforts to facilitate effective teaching for larger groups. The workbook is the next logical step in an endeavor to satisfy the needs of both

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[4] Wendell Vreeland, "A Good Workbook from the Teacher's Point of View," The Nation's Schools, 18:1, July, 1936.

student and teachers.

Emphasis upon supervised study necessitates a longer recitation period, according to recent articles in the North Central Association Quarterly. Due to this innovation, administrators and teachers have problems, the solution of which should result in more effective study and better use of recitation periods. In order to use the lengthened periods profitably, it has been necessary to devise techniques whereby the time and energy of the teacher and students might be not only conserved, but at the same time put to better advantage. The modern workbook in its various forms has been the natural development from these attempts of teachers to make their technique more effective.

## TYPES OF WORKBOOKS

There are three common types of workbooks. First, the general type[5] which is designed to accompany any text book in the particular field which the workbook covers. Such workbooks[6] contain general questions, exercises, and tests covering the material that a student should encompass

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[5] Robert W. Jacobs, "The Status of the Workbook in Classroom Instruction," Educational Methods, December, 1938. 17:65-67.

[6] D. E. Smith, W. D. Reeve, and E. L. Morse, Exercises and Tests in Algebra (Chicago: Ginn and Company, 1926) 224 pp.

through the study of those various units. The second type[7] which has only recently appeared is a combination of workbook and text book. The instructional materials include what was formerly organized in textbooks and in addition there are included exercises, tests, et cetera, ordinarily found in a separate workbook. A good example is in the field of geometry.[8] A third type which is more widely published at present represents a workbook which is prepared to accompany a particular text, references being made to specific pages of the textbook.[9] The material which comprises the third chapter of this work represents this type.

## FUNCTIONS OF THE WORKBOOK

The type of work presented in a workbook will of necessity vary with the subject matter and the age of the student who is to use it. However, there are several well established types of exercises that are of value. One of these is the preparatory drill. Before new difficulties

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[7] C. R. Maxwell, "The Workbook--A Recent Development," School Board Journal, March, 1934. 88:16.

[8] D. E. Smith, W. D. Reeve and E. L. Morse, Text and Tests in Plane Geometry (Chicago: Ginn and Company, 1938) 254 pp.

[9] G. C. Wood and H. A. Carpenter, Science Discovery Book, Book Three (Chicago: Allyn and Bacon, 1934) 311 pp.

are encountered in the text, they are met and overcome in the preparatory lessons in the workbook. An illustration may be given in primary reading. Certain new words occur in the textbook lesson. If the student meets these without preliminary help, he will stumble and perhaps fail. By using a picture dictionary and other devices these words can be presented first in an interesting fashion. Later when the child meets them in the text his reading can go on smoothly.

Another type of material commonly found in the workbook is the practice exercises which give opportunity for abundant drill. Any mathematics workbook furnishes numerous examples of this type of material.[10]

A third function of the workbook is to provide exercises at definite intervals for checking pupil achievements and diagnosing student needs. Whatever the type of exercise included in the workbook, a first requisite is that it should provide a maximum amount of pupil activity, and that this activity shall be of such a nature as to require real learning and not be of the nature of busy work.

---

[10] L. H. Whitcraft, Workbook Lessons for First Year Algebra (Chicago: Ditto, Incorporated, 1934) 80 pp.

## THE PLACE OF THE WORKBOOK

It is in providing the necessary material for teaching the specific units of learning that the workbook has a place in the modern public school. More flexible in nature than the text book and more systematically organized than teacher-made exercises can usually be, the workbook occupies a middle ground between these two standard types of teaching equipment. It is usually impossible for the text to contain the practical material which is needed to insure mastery of a learning unit, and even when such material is incorporated in the text the student has to copy the material on his paper.

It is expecting the impossible to suppose that the teacher can prepare material for all subjects in sufficient quantity and of the carefully selected quality necessary to secure economical learning. Most teachers have neither the training nor the time for making original exercises. To be effective, these exercises must be carefully selected to give precisely the type of practice needed. They also need to be of such a nature that they will make a definite appeal to the student.

A teacher's time is valuable. It can best serve the school when it is utilized in studying the child, in selecting suitable materials, and in adapting these to

the immediate needs of the individual. The average teacher is at his best as a guide and counselor and not as a writer of instructional material.

A school that depends largely upon teacher-made material must consider the cost in money and teacher time to prepare the material. Such work is usually presented to the pupils on blackboards, by teacher dictation, or in duplicated form. When work is placed on the blackboard, much teacher and pupil time is consumed in merely copying and a considerable amount of extra paper is used. Teacher dictation is satisfactory in some cases, but impossible to use in many drill situations as in developing a reading ability. The use of the duplicated materials is valuable in many ways, but when this plan is used extensively there is a large cost involved for paper, duplicator rolls, ink, and stencils. In addition to these costs, a large amount of teacher time and energy is consumed in the preparation of the exercises. Many workbooks are now on the market at such low cost that their purchase for the class costs but little more than the amount necessary to buy these supplies for the home made materials.

## WORKBOOK CRITERIA

The busy executive who has accepted the idea of using workbooks is still struggling with difficult questions

have a place in modern education because they have a unique contribution to make to the learning process. However, the advantage likely to accrue to any school system for their use will be in the direct proportion to the judgment displayed by administrators and teachers in selecting and using them.

## ARGUMENTS PRO AND CON

In the consideration of the workbook merely as a tool for teaching the fundamental skills, and thus freeing the teacher for the more important phases of his work, i.e., development of personalities, participation in social, political, economic and recreational life, Gates finds many valid arguments for its use:[12]

1. The workbook saves the pupil's time.

2. The workbook makes instruction adjustable to individual difference.

3. Programs which incorporate self-manageable activities in a workbook with group activities and with the usual kind of text book reading and study, prove to be more satisfying to the pupils than any one of these procedures alone.

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[12] Arthur I. Gates, "The Workbook in Practice," School Executives Magazine, April, 1932. P. 349.

as:

How shall I distinguish between the good and the bad? What shall be the standard of selection? How shall I guide the teachers in choosing workbooks?

The following principles may aid the busy executive in finding answers to the above questions:[11]

1. A workbook should follow the well established objectives of the subject matter for which it is written.

2. It should be of interest to the student for whom it is intended. This means that the content, activities, and illustrations must conform to the tastes of the student.

3. It should be so planned that the accomplishment of the exercises is satisfying to the student. To secure this, the activities must be such that the student can do them with fair success, and the results must be shown in some objective manner that will permit self measurement.

4. It should be so organized as to require a minimum amount of teacher direction and to permit to a large extent student self direction. This is important, not only because it encourages independence and responsibility of the student.

5. It should be economically priced. Workbooks should

---

[11] E. McGuire, "Teacher, Pupil, and Workbook," School Executive Magazine, October, 1934. 54:46-7.

4. The workbook program, properly organized, leads to better integration and application of the information and skills acquired.

5. The workbook program develops skill in planning and executing activities and projects, on managing one's own learning, on diagnosing and seeking remedies for one's own difficulties, and in acquiring other self-sustaining techniques.

6. The workbook reduces the number of failures.

7. The workbook program is less expensive.

These arguments are subject to amplification; the list itself might be lengthened indefinitely, and each item legitimately supported. On the other hand, there are those who regard the workbook with skepticism, if not actual disfavor.

They maintain:

1. The use of the workbook tends to minimize individual differences since all students are to answer the same questions, work the same problems, and perform the same experiments.

2. The workbook emphasizes the teaching of text book material rather than the development of children through their own experience. Its use tends to stress the memorization of facts rather than the elaboration of principles.

3. Initiative and independence on the part of the pupil

is not developed because of the limitations of the work to one text book.

4. The workbook is often merely handed to the pupil with little or no discussion of the principles involved. In this way the teacher tends to abrogate his position, as a teacher, to the workbook.

5. The workbook makes pupils "expert blank-fillers" and does not teach them organization and application of knowledge.

6. The workbook is an added expense.

The foregoing statements, both for and against the use of the workbook, represent an endeavor to set forth the best arguments on both sides. No attempt has been made to minimize the findings on either side. That the workbook has powerful points in its favor cannot be denied. Just how far its weaknesses offset its strength must remain for the present, at least, more or less a matter of individual opinion. Before wholly condemning or accepting the workbook, both sides should be studied carefully.

## NECESSITY FOR CAREFUL INVESTIGATION

The schools of America seem to have widely accepted and adopted a technique without first determining whether or not it is a valid procedure. One may wonder why such a situation has developed. A plethora of workbooks is available

in the elementary school, the high school, and to some extent in the college. What has brought about such a situation? Have teachers demanded a tool that would require less effort on their parts when called upon to teach larger classes? Have they been encouraged to adopt workbooks because the time worn arguments have been used, that other communities have adopted workbooks and to be up to date a teacher must use them? Have authors been induced to prepare workbooks to accompany their texts because they have found that teachers are so inadequately trained that they have failed to secure maximum results from the text book without having additional aid? Have the publishers, during the stress and strain of the present economic crisis, been encouraged to publish material which is rapidly consumed? This perplexing problem of whether or not to use workbooks is one that must be met squarely by every administrator, but its solution does not lie in seeking to satisfy any or all the interested group, the teacher, the parent, or the salesman.

To the knowledge of the writer there have been only four scientific studies made on the use of workbooks. One by Hurd,[13] "The Workbook as an Instructional Aid" is an

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[13] A. W. Hurd, "Workbook as an Instructional Aid," School Review, October, 1931. 39:608-16.

experiment with 1,125 students in twelve schools. The experiment was planned to keep all factors of instruction as nearly alike as possible except that part of the classes used work sheets in connection with the text book, while the others used only the textbook. The following are Professor Hurd's conclusions gained from the experiments.

> One could reasonably conclude from these data that worksheets tend to help pupils in situations like those studied, but they are not indispensable. Other features of the instruction are also important.
>
> The experiments taken together help to clarify ideas with regard to functions of the workbooks. First, they are shown to be helpful to some teachers in increasing measured achievement. Second, they will not serve as a panacea to remedy all the inadequacies of present instruction. Third, they probably are particularly useful in directing the attention of both pupil and teachers to specific items of knowledge, techniques, and appreciations. In short, if the objectives are not in dispute, workbooks may serve as helpful aids in many classes.

Another experiment with the workbook was conducted by Scott, "Is the Workbook Really Worth While?" In this experiment twelve classes were used in the Garden City, Kansas, schools. The "A" group used the textbook only. The "B" group used the textbook and the workbook. The "C" group used only the workbook. The classes were divided to make the groups equivalent as nearly as possible in a public-school system, on the basis of mental age. The sections in each group as in biology, algebra, et cetera, were taught by the same teacher with the same objectives

in mind for the three sections. Each class was given a preliminary teacher-made test at the beginning of the term. The teacher-made test was used in order to obtain, as nearly as possible, a test valid for the objectives set up by the teachers. At the close of the term the same test was administered. The following are Doctor Scott's[14] conclusions obtained from the experiment.

> Attention to the consideration of all available studies shows that the disparity of subjects showing differences in favor of either method is so wide as to indicate no consistent results. These studies have not shown for which of the subjects, if any, the workbook method is preferable.
>
> The lack of conclusive results in this experiment or in any investigations made previously to determine the value of the workbook indicates that, if this teaching device is to be correctly evaluated, more research on the problem is essential.
>
> It should be determined by carefully planned and controlled experiments whether a properly constructed workbook, built for specific purpose and placed in the hands of a teacher educated to use such a workbook, would produce class achievement greater than that of the traditional method; what criteria may best be used to measure the real worth of a workbook; whether a workbook constructed for a specific purpose can actually achieve that purpose; whether the workbook is really an adequate substitute for oral teaching; and whether the workbook is really a better teaching device than the ordinary text.

Two experiments with workbooks have been conducted

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[14] I. O. Scott, "Is the Workbook Really Worth While?" American School Board Journal, August, 1937. 95:27-28
A part of a study in connection with a doctoral dissertation accepted at Colorado State Teacher's College.

in the field of social science. A report of these was made by Tryon[15] as follows:

> To the writer's knowledge, but two experiments involving workbooks in the social sciences have been reported. One of these was conducted in grade VII of a large junior high school,[16] and the other in grades XI and XII of a senior high school,[17] the latter in civics and the former in conduct problems. Both of these experiments were organized and conducted according to recognized techniques in classroom experimentation, the experimental group in each study systematically using a workbook and the control group being deprived of its use. The conclusions from the experiments do not justify the expense involved in placing workbooks in civics. The statement is made that the workbook had no statistically significant effects on the achievement of the group using it. While the results of these two experiments are too meager to be significant, they deserve more serious consideration than a batch of mere "hunches" of uninformed advocates.

A solution of the workbook problem in the social sciences is suggested by Tryon.[18]

> Should the workbooks in the social sciences pass (and there are some indications that they will), it is proper to ask: What will step in to do the work that they have supposedly come to do?

---

[15] R. M. Tryon, "The Development and Appraisal of Workbooks in the Social Sciences," The School Review, January, 1938. p. 17.

[16] Elmer W. Cressman, "Workbook Versus Oral Instruction," Journal of Educational Sociology, VII, December, 1933. pp. 250-53.

[17] Clayton L. Nelson, "The Effectiveness of a Specific Workbook in Learning American Government," (Unpublished Master's Thesis, University of Iowa, 1932.)

[18] Tryon, op. cit., p. 17.

> That is, what will meet the situation in the field of instruction which was brought about by the passing of the traditional recitation in the social sciences and the supervised-study and the individualized-instruction movements? To those who fear that this situation will not be satisfactorily met should the workbook supply be cut off, it may be said that the situation is now being met by thousands of teachers of the social sciences in all grades of instruction by means of instructional aids of their own construction. When teachers of the social sciences assume the responsibility of making the guide sheets, the work sheets, and the tests required to good teaching and are furnished with the facilities for duplicating these in quantities to meet the needs of their classes, the teaching situation created by the educational events of the past few decades will be met much more effectively in the social sciences than workbooks in this field can ever meet.

A word of warning should be sounded that the study guide is not and cannot become the only necessary instrument of instruction. It is not to supplant the course of study but rather to be used to help accomplish the objective set up by the course of study. It is not in most cases to supplant the textbook, but rather to supplement it and to provide those forms of experiences not readily available in a textbook. Certainly it is not to supplant the teacher, but rather is to be used by him in more fully individualizing his instruction and in securing a highly efficient class performance.

In the following chapter an attempt has been made by the writer to carry out the above conclusions in the construction of a study guide to be used in senior high school health.

## REVIEW OF STUDY GUIDES IN HEALTH

The writer has made several attempts during the past few years through the examination of the catalogues of companies which publish textbooks in health to find published material in the nature of a study guide for senior high school health, but has been unable to locate one. The writer has also written to several companies which make a practice of publishing only workbooks, but they have always reported that they do not publish a study guide in health for the senior high school nor do they report any company which does publish one.

CHAPTER III

# A STUDY GUIDE AND LABORATORY MANUAL IN PHYSIOLOGY AND HEALTH FOR HIGH SCHOOL STUDENTS TO ACCOMPANY HEALTHFUL LIVING BY WILLIAMS

CHARLES H. ROBINSON

NAME _____ DATE _____

SCHOOL _____ ADDRESS _____

## TO THE STUDENT

This study guide has been prepared for you to use while you are studying physiology and health. The questions will aid you to observe closely and accurately and to draw proper conclusions in your work. You will be asked to sketch many drawings and pictures to assist you in the understanding of your problems.

Always do your work honestly, neatly, and attractively, then you will enjoy this manual and will understand and appreciate the activities pertaining to your health.

## TO THE TEACHER

Teachers are usually desirous of improving their efficiency of instruction, and to that end wish to ascertain whether the expected changes in pupil reaction have been accomplished. This study guide should aid a teacher to a certain extent at least to determine objectively whether or not he is accomplishing with his class what he supposes is taking place in his teaching.

The conclusions of the educational psychologists furnish us with the following ideas:

a. We learn best those responses which we make.

b. The association of ideas to be associated in learning must be recognizable to the learner.

c. Becoming aware of unanswered questions sets up a state of dissatisfaction in the student which is removed only by finding the answers to those questions.

Any study guide in physiology and health should assist in carrying out these ideas and should also meet the following requirements:

a. It should provide questions enough to cover the subject matter of the course.

b. It should provide sufficient material for the individual differences among the students of the class.

c. It should provide enough experimental material for

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The conclusions of the experimental psychologists furnish us with the following leads:

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a. It should provide questions enough to cover the subject matter of the course.

b. It should provide sufficient material for individual differences among the students of the class.

c. It should provide enough experimental material for

laboratory work.

This study guide has been written in an attempt to meet the above requirements.

The process of learning is accumulative, one learns by using again and again the bonds that have once been formed. This manual assists in this process by supplementing the textbook, classroom discussion, and the laboratory work.

For the student this manual presents practically self teaching material, it furnishes a very economical means of mastering the subject matter. It closely connects the laboratory work with the class work, by reproducing a number of figures like those in the textbook, to be drawn, labeled, and to be studied by the student.

Each sheet of the manual is perforated to permit the instructor to call for the work after each chapter or at stated periods. It has been the experience of the writer in using this material, that there is much to be gained, not only in the efficiency of the teaching, but also in the motivation of the work, if the problems are called for periodically.

The time usually given to a course in health in the high school is not sufficient for all the work in this manual to be done by each student. A minimum amount may be required of all students and the supplementary exercises may be assigned to the advanced students.

Learning is always an active process. Every question in this manual is a challenge to the student, and working out the answers brings a degree of satisfaction and accomplishment to him.

# INSTRUCTIONS FOR USING THE STUDY GUIDE

For each section, there are specific page references from the textbook, Healthful Living, by Williams. After reading those pages you will be able to answer the questions which are based upon each specific section.

1. True, False Sentences

   If the sentences are true encircle T, if false encircle F.

2. Completion Sentences

   Fill in each blank with the proper word.

3. Multiple Choice Sentences

   Place the number with the word or phrase, which make the sentence correct, in the space at the right.

4. Laboratory Exercises

   The laboratory exercise may be performed according to the directions given in the text, supplemented by further instruction of the instructor.

5. Matching Type

   Place one of the words or phrases on the left in the correct blank on the right. By using the word or phrase rather than the number on the left you will have another association in writing of the two words which go together, since placing a number would give no association of thought.

6. Essay and Identify Type

You may answer this type questions on the blank page following each set of questions.

7. Scoring

The score is to be determined on all exercises except the laboratory and supplementary exercises.

The conversion figure or multiplier following each section has been found by dividing the number of questions of that section into a hundred. The resulting score will be a percentage score.

Encircle the number representing the correct answers for each section. Multiply the number representing the correct answers by the multiplier given for each section and place the result on the graph. This result represents your score for each section. Then by connecting the numbers on the graph you will have a graphic representation of the semester's work.

## SECTION I

### THE PROBLEMS OF HEALTHFUL LIVING

Read pages 1-28 in Healthful Living

T F 1. There are nine health rules listed by the author.

T F 2. During the World War between ten and twenty percent of the young men between the ages twenty-one and thirty-one were unfit for military duty.

T F 3. By living wholesomely and healthfully one may overcome a poor health heredity.

T F 4. Typhoid fever is increasing in the cities.

T F 5. Ill health is largely unnecessary.

T F 6. The infant mortality rate is increasing.

T F 7. The diseases of middle life are decreasing.

T F 8. Doctor Lazear lost his life in the great fight against yellow fever.

T F 9. Florence Nightingale was a nurse during the World War.

T F10. Doctor Gorgas freed the Canal Zone of yellow fever.

11. The condition in which all organs of the body are working efficiently towards the fullest possible life is called _____ _____.

12. In the great game of life there are three influences, heredity, environment, and _____.

13. Science seeks the _____.

14. The disease causing the most deaths in the United States is _____.

15. The economic loss from ill health in the United States is about a _____ dollars annually.

16. The office of the International Health Organization is located in: (1) Berlin; (2) Paris; (3) London. ( )

17. There are: (1) five; (2) nine; (3) seven; health rules listed by the author that we should follow in order to have better health. ( )

18. The preventable and infectious diseases are: (1) increasing; (2) decreasing; (3) remaining the same. ( )

## SUPPLEMENTARY EXERCISES

19. Give a short biography of the life of Pasteur.

20. Give a short biography of the life of Walter Reed.

## KEY

1. F
2. F
3. T
4. F
5. T
6. F
7. F
8. T
9. F
10. T
11. Perfect health
12. Individual effort
13. Truth
14. Heart disease

15. Billion
16. Paris
17. Seven
18. Decrease

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Multiplier 5.5

## SECTION II

### THE CELLS OF THE BODY

Read pages 29-44 in Healthful Living

T F 1. Cells of both plants and animals are made of protoplasm.

T F 2. Life originates spontaneously.

T F 3. A group of cells are known as a tissue.

T F 4. The amoeba is a one cell plant.

T F 5. The nucleus is the center of life in the cell.

6. The cell is a unit of structure composed of protoplasm, surrounded by a cell wall containing a nucleus and a _____.

7. The liquid substance which makes up the cell body is called _____.

8. The conversion of food into tissue is called _____.

9. The five functions of cellular life are irritibility, conductility, contractility, metabolism, and _____.

10. The breaking down and the removal of tissue cells is called _____.

11. Tissues grouped together are known as an _____.

12. The process of building up and breaking down the tissue of the cell is called, (1) catabolism; (2) anabolism; (3) metabolism. ( )

13. The cell has, (1) one; (2) six; (3) four; (4) three parts. ( )

## SUPPLEMENTARY EXERCISES

14. Draw a cell and label its parts.
15. Describe the amoeba.
16. Draw the six steps in the division of the cell.
17. Summarize the section, similarity between the human body and a city.

## KEY

1. T
2. F
3. T
4. F
5. T
6. Nucleolus
7. Protoplasm
8. Anabolism
9. Reproduction
10. Catabolism
11. Organ
12. Metabolism
13. Four

1 2 3 4 5 6 7 8 9 10 11 12 13

Multiplier 7.75

## SECTION III

### TISSUES AS BUILDING MATERIALS

Read pages 44-64 in Healthful Living

T F 1. People with no coloring matter in their skin are called Albinos.

T F 2. The sweat glands bring poisons to the surface of the skin.

T F 3. The amount of perspiration amounts to about one and one half quarts per day for the average person.

T F 4. The oil glands secrete oil which aids in the keeping of the skin flexible.

T F 5. The serous membrane secretes mucus.

6. The five kinds of tissue are epithelial, nervous, vascular, connective, and _____.

7. The projections on the outer surface of the dermis are called _____.

8. The alimentary canal is lined throughout with a _____ membrane.

9. The heart, chest cavity, and the abdominal cavity are lined with a _____ membrane.

10. The endocrine glands are also called the _____ glands.

11. The endocrine glands empty their secretions into the _____.

12. Epithelial tissue serves, (1) two; (2) three; (3) four functions. ( )

13. The true skin is called the, (1) epidermis; (2) dermis; (3) epithelial. ( )

14. Our finger nails are the growth of the, (1) dermis; (2) papillae; (3) epidermis. ( )

15. The secretion of the mucus membrane is called, (1) serous; (2) serum; (3) mucus. ( )

## SUPPLEMENTARY EXERCISES

16. Name the two functions of the epithelial tissue.

17. Name the four organs of the skin and the functions of each.

18. Give the two main functions of the nerves of the skin.

19. Summarize section, hygiene of the skin.

20. Summarize the section of the hair.

## KEY

1. T
2. T
3. F
4. T
5. F
6. Muscular
7. Papillae
8. Mucus
9. Serous
10. Ductless
11. Blood stream
12. Two
13. Dermis
14. Epidermis
15. Mucus

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Multiplier 6.66

SECTION III CONCLUDED

Read pages 65-82

T F 1. Cartilage is made from elastic tissue.

T F 2. Matrix is the substance between the cells of cartilage.

T F 3. The fluid of the blood is called lymph.

T F 4. Blood and lymph are classed as tissue.

T F 5. Lymph is the substance from which the cells obtain their food.

T F 6. Plasma is known as the middle man.

T F 7. The power of contractility arises from the physical change going on in the muscle from the oxidation of sugar.

T F 8. The strength of the muscle is greater after some work has been done.

T F 9. Our work is more efficient when we use alcoholic drinks.

T F 10. The nerve cells and their branches are called axons.

11. Tissue which is loosely hung, filling in spaces is called _____.

12. Where strength and toughness are characteristic the

tissue is _____.

13. Fibrous tissue binding joints together is called _____.

14. Cartilage and bone are closely related as to location, function, and _____.

15. Nerve cells arranged in distinct masses are called _____.

16. Nerve cells consist of protoplasm containing a _____.

LABORATORY EXERCISES

Experiments 1, 2, and 3, pages 81 and 82

KEY

1. T
2. T
3. F
4. T
5. T
6. F
7. F
8. T
9. F
10. F
11. Areolar
12. Fibrous
13. Ligaments
14. Development
15. Ganglions
16. Nucleus

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Multiplier 6.25

## SECTION IV

### BUILDING GOOD TISSUE

Read pages 83-93

1. Total abstinence from alcoholic drinks increases _____.
2. _____ should be used only on the doctor's prescription.
3. Sleep of some people is interfered with by drinking _____.
4. Drinking _____ disturbs the digestion and deranges the eye sight.

### SUPPLEMENTARY EXERCISES

5. Summarize the section, The rules of the game in relation to good health.
6. Give briefly the results of the experiments of Professor Hodge on the four puppies in alcohol.

### KEY

1. Longevity
2. Drugs
3. Tea
4. Coffee

1 2 3 4

Multiplier 25

# LABORATORY EXERCISES

Experiments 1 and 2, pages 92 and 93

## SECTION V

### ORGANS FORMED FROM TISSUE

Read Pages 94-109

T F 1. The substances secreted by the endocrine glands are autocoids.

T F 2. Harmones inhibit activity in the body.

T F 3. Chalones stimulate activity in the body.

T F 4. The thyroid gland is located on the top of the kidney.

T F 5. Children born with a thyroid deficiency are called cretins.

T F 6. The pituitary gland is located at the base of the Adam's Apple.

T F 7. The pituitary gland is about the size of a pea.

T F 8. The size of the individual depends upon the pituitary glands.

T F 9. Diabetes results when the thyroid gland fails to function properly.

T F 10. The pancreas is a double gland with a single function.

11. The thyroid controls the rate at which _____ is released by the body.

12. The adrenal glands are located on top of the _____.

13. The secretion of the adrenal glands is known as _____.

14. The adrenal glands respond sharply to emotional excitement to produce a great _____.

15. The pancreas is both a duct and a _____ gland.

16. The secretion of the pancreas empties into the _____.

17. The secretion of the thyroid is called, (1) insulin; (2) epinephrin; (3) thryoxin. ( )

18. The secretion of the pancreas which enters the blood stream enables the liver to store, (1) sugar; (2) starch; (3) fat. ( )

19. This secretion also enables the muscle to burn, (1) sugar; (2) starch; (3) fat. ( )

20. One secretion of the pancreas is, (1) epinephrin; (2) cretin; (3) insulin. ( )

LABORATORY EXERCISES

Experiment page 109

KEY

1. T
2. F
3. F
4. F
5. T
6. F
7. T
8. T
9. F
10. F
11. Energy
12. Kidneys
13. Epinephrin
14. Muscular effort

15. Ductless
16. Alimentary canal
17. Thyroxin
18. Sugar
19. Sugar
20. Insulin

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Multiplier 5

## SECTION VI

### THE SKELETON FRAMEWORK OF THE BODY

Read pages 110-128

T F 1. The human skeleton is better adapted for locomotion than is the skeleton of the lobster.

T F 2. Fontanelles are the spaces, filled with membrane, of the skull of the infant.

T F 3. Sinuses are the spaces between the bones of the head.

T F 4. The function of the back bone is for the support of the body and for protection to the spinal cord.

T F 5. The words thorax and chest are synonymous.

Fill in each blank with the proper word.

6. The skeleton in the human body is a system of bones arranged for protection, support, and _____.

7. The two parts of the skull are the cranium and the bony parts called the _____.

8. The vertebral column consists of _____ bones.

9. The close-clinging fibrous covering of the bones is _____.

10. The mineral matter of the bone is chiefly _____.

11. Ligaments are composed of white _____ tissue.

12. The fixed joints are in the bones of the _____.

13. The ligaments inclosing the joints of bones are called _____.

14. The thin membraneous sac lining the capsule is the _____.

15. Diseased tonsils and teeth frequently inhibit the movement of the _____.

KEY

1. T
2. T
3. T
4. T
5. T
6. Movement
7. Face
8. Twenty-six
9. Periosteum
10. Lime
11. Fibrous
12. Skull
13. Capsule
14. Synovial membrane
15. Joints

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Multiplier 6.66

## SECTION VII

### HYGIENE OF THE SKELETON

Read pages 129-147

T F 1. The blood vessels that supply the bones enter from the inner side of the periosteum.

T F 2. Animal matter of bones is abundant in childhood.

T F 3. A hot bath given immediately is beneficial for a sprain.

T F 4. Foot exercise will not halp a weak foot.

T F 5. Posterior curvature results in a flat chest and round shoulders.

T F 6. Posterior and lateral curvature are synonymous.

7. The outer covering of the bone is _____.

8. When a ligament is torn from its fastenings the injury is a _____.

9. Bending down of the front ends of the ribs causes _____.

10. Any inclination occuring in the sitting position should occur at the _____.

11. The proper lying position is on the _____ side.

12. While standing the weight should be carried on the _____ of the feet.

13. In walking the weight should be carried on the _____.

14. Indulgence in wine is a very common cause of _____.

15. Direct _____ is valuable in preventing deformity

of bones in children.

16. Deformities of the spinal column come chiefly from bad _____.

## SUPPLEMENTARY EXERCISES

17. What care should be taken in the case of broken bones?
18. What are the characteristics of a good shoe?
19. What are the essential things for the proper development and growth of bones?

## LABORATORY EXERCISES

Experiments page 147

## KEY

1. T
2. T
3. F
4. F
5. T
6. F
7. Periosteum
8. Sprain
9. Posterior
10. Hip joint
11. Right
12. Balls
13. Outer side
14. Gout
15. Sunshine
16. Posture

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Multiplier 6.25

## SECTION VIII

### THE MUSCLES AS THE MOTOR MACHINERY OF THE BODY

Read pages 148-163

T F 1. The muscle cell has been developed to a high point of efficiency in conductivity and irritability.

T F 2. Motion is one of the properties of protoplasm.

T F 3. Contraction is a specialized property of the nerve cell.

T F 4. Muscular tissue occurs in nearly every organ.

T F 5. The involuntary muscles are under the control of the will.

T F 6. Contraction of the muscle is caused by the contraction of its individual fibers.

T F 7. Cardiac muscle tissue is found in the heart.

T F 8. The two pair of chewing muscles are the temporal and deltoid.

T F 9. The masseter muscle is the longest muscle in the body.

T F 10. The sartorius muscle is found in the calf of the leg.

11. One of the essentials of life, the movement of the body, is made possible by the specialization of _____.

12. Muscles are divided into _____ classes.

13. The walls of the alimentary canal are lined with _____ muscles.

14. The involuntary muscles are usually foung in organs with _____.

15. Voluntary muscles are called _____ because they are mostly attached to the bones.

16. Favorable birth is another name for, (1) euthenics; (2) euglena; (3) eugenics. ( )

17. The portion of the muscle which is white and inelastic is, (1) tendon; (2) trapezius; (3) pectoralis. ( )

18. Another name for the involuntary muscle is, (1) skeletal; (2) latissimus; (3) visceral. ( )

19. The internal organs are called, (1) gastrochemius; (2) visceral; (3) pectoralis. ( )

20. Muscles are named from their, (1) size; (2) color; (3) shape. ( )

## SUPPLEMENTARY EXERCISES

21. Identify: gastrocnemius, temporal and masseter, "Tendon of Achilles," trapezius, and pectoralis.

## KEY

| | |
|---|---|
| 1. F | 6. T |
| 2. T | 7. T |
| 3. F | 8. F |
| 4. T | 9. F |
| 5. F | 10. F |

11. Muscle
12. Two
13. Involuntary
14. Cavities
15. Skeletal
16. Eugenics
17. Tendon
18. Visceral
19. Visceral
20. Shape

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Multiplier 5

## SECTION IX

### THE MUSCLES IN ACTION AND THE HYGIENE OF EXERCISE

Read pages 164-191

T F 1. The muscle and its nerve is known as a unit.

T F 2. This unity is known as a psycho-motor mechanism.

T F 3. Exercise has a stimulating effect upon growth.

T F 4. The center of gravity is lower in a boy than in a girl.

T F 5. The sun's rays increase the calcium and phosphorus of the blood.

6. The unit of a muscle and its nerve is called a _____.

7. The working together of a muscle and nerves is _____.

8. Chemical action in the food materials in the body yields _____.

9. The condition of muscles when under a slight contraction is _____.

10. The chemical substances formed in the muscles during the production of energy is known as _____ substances.

11. The effect of stimulants and narcotics on albumin cause a fatty condition known as _____.

12. When fat or carbohydrates are used as the source of energy for muscular contractions the water products are, (1) lactic acid; (2) urea; (3) creatin. ( )

13. When proteins are used, the waste products are, (1) uric acid; (2) carbon dioxide; (3) potassium phosphate. ( )

14. Our heat energy is obtained from, (1) minerals; (2) carbohydrates; (3) proteins. ( )

## SUPPLEMENTARY EXERCISES

15. Explain the coordinating of muscles by giving an example.

16. What two facts are closely associated with food being used in the body?

17. How is energy transformed in the body?

18. List five forms of exercises and tell something about each.

19. Name five differences between boys and girls.

20. What is meant by over development of muscles?

## LABORATORY EXERCISES

Experiments pages 189-191

## KEY

1. T
2. F
3. T
4. F
5. T
6. Neuro-muscular mechanism
7. Coordination
8. Energy

9. Tone
10. Fatigue substances
11. Fatty degeneration
12. Lactic acid
13. Uric acid
14. Carbohydrated

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Multiplier 7.14

## SECTION X

### FOOD AND ITS USES

Read pages 192-213

T F 1. Vitamin A in the diet prevents scurvy.

T F 2. Deficiency of vitamin D causes beriberi.

T F 3. Milk and eggs rank high in all three functions of food.

T F 4. Meat is used as a source of protein.

T F 5. One of the very essential minerals for bone building is phosphorous.

T F 6. Rice is one of the principal foods of China.

7. Cooking injures vitamin _____.

8. Milk, vegetables, and fruits furnish the chief supply of the vitamins and _____ needs of the body.

9. The power that enables one to move, think, and do all things that are expressions of life is _____.

10. The process by which the sun and plants make food is _____.

11. All energy comes directly or indirectly from the _____.

12. Carbohydrates contain carbon, hydrogen, and _____.

13. Fats are composed of oxygen, hydrogen, and _____.

14. Proteins contain carbon, hydrogen, oxygen, and _____.

15. Rickets and defective bone formation is aided by vitamin, (1) A; (2) B; (3) C; (4) D. ( )

16. The growth vitamin is, (1) A; (2) B; (3) C; (4) D; (5) E. ( )

17. The foods which produce energy are, (1) minerals; (2) vitamins; (3) water; (4) fats and carbohydrates. ( )

18. The foods which furnish building material are, (1) water; (2) minerals; (3) carbohydrates; (4) proteins. ( )

19. Vitamin A _____ Growth vitamin

20. Vitamin B _____ Reproduction

21. Vitamin C _____ Rickets and defective bones

22. Vitamin D _____ Indigestion, anemia, etc.

23. Vitamin E _____ Scurvy

SUPPLEMENTARY EXERCISES

24. Give the six food stuffs.

25. Why do we need minerals? Name their sources.

26. Give the three functions of foods.

27. What are the necessary things for choosing a proper diet?

KEY

1. F
2. F
3. T
4. T
5. F
6. T

16. The growth vitamin is, (1) A; (2) B; (3) C; (4) D;
(5) E. ( )

17. The foods which produce energy are, (1) minerals;
(2) vitamins; (3) water; (4) fats and carbohydrates.
( )

18. The foods which furnish building material are, (1)
water; (2) minerals; (3) carbohydrates; (4) proteins.
( )

19. Vitamin A _____ Growth vitamin

20. Vitamin B _____ Reproduction

21. Vitamin C _____ Rickets and defective bones

22. Vitamin D _____ Indigestion, anemia, etc.

23. Vitamin E _____ Scurvy

SUPPLEMENTARY EXERCISES

24. Give the six food shuffle.

25. Why do we need minerals? Name their sources.

26. Give the three functions of foods.

27. What are the necessary things for choosing a proper
diet?

KEY

1. F 4. T

2. F 5. F

3. T 6. T

7. C
8. Minerals
9. Energy
10. Photosynthesis
11. Sun
12. Oxygen
13. Carbon
14. Nitrogen
15. D
16. A
17. Fats and carbohydrates
18. Proteins
19. A
20. E
21. D
22. B
23. C

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

Multiplier 4.35

## SECTION XI

## THE DIGESTION OF FOOD

Read pages 214-253

T F 1. The submaxillary glands swell when one has the mumps.

T F 2. There are three glands which produce saliva.

T F 3. The digestive enzyme of saliva is pepsin.

T F 4. The average person produces from one to three pints of saliva daily.

T F 5. The teeth are produced from the same kind of tissue that produces mucus membrane, glands, and skin.

T F 6. There are twenty teeth in the temporary set.

T F 7. Peristalsis and pylorous are synonymous.

T F 8. The secretion, bile of the liver, contains an enzyme.

9. Enzymes are substances secreted by the _____.

10. Substances which start a chemical action but do not enter into the reaction are _____.

11. The two aspects of digestion are physical and _____.

12. The tongue aids in talking and in the _____.

13. The number of teeth in the permanent set are _____.

14. The main part of the tooth is _____.

15. Piano keys are made from _____.

16. The pulp of the teeth contains the nerves and _____.

17. Adenoids deform the jaw and cause _____.

18. The pharnyx is commonly called the _____.

19. The esophagus conducts the food to the _____.

20. The enzymes of the gastric juice acts upon _____.

21. The semifluid condition of the food in the alimentary canal is known as _____.

22. The harmone _____ causes the pancreatic juice, bile, and the intestional juices to flow.

23. The carnivorous eating animals are (1) vegetarian; (2) flesh eating; (3) "all-eating". ( )

24. The herbivorous eating animals are, (1) vegetarian; (2) flesh eating; (3) "all-eating." ( )

25. The omninorous eating animals are, (1) vegetarian; (2) flesh eating; (3) "all-eating." ( )

26. The alimentary canal has, (1) two; (2) four; (3) three; (4) linings. ( )

28. The blood arrives in the liver via the portal vein for _____.

29. The bile aids in the emulsification of _____.

30. If an excess of protein is eaten the liver is over-worked transforming it into _____ which passes out through the kidneys.

31. Worn out red corpuscles are destroyed in the _____.

32. Alcohol causes a scarring effect in the liver known as _____.

33. Only one and one-half ounces of sugar in each one thousand ounces of arterial blood is allowed to enter the _____ at any given time.

34. Liver _____ enzymes

35. Pancreas _____ muscular contraction

36. Salivary glands _____ erepsin

37. Gastric juice _____ secretion

38. Intestional juice _____ steapsin

39. Peristalsis _____ cirrhosis

40. Pharnyx _____ dentin

41. Digestive glands _____ ptyalin

42. Intestional cells _____ throat

43. Teeth _____ pepsin

## SUPPLEMENTARY EXERCISES

44. Summarize, section hygiene of the teeth.

45. Describe the large intestine.

46. Name the three causes of functional disturbances of the liver.

47. Name three waste products of our food elements.

48. Identify: Villi, cementum, pyorrhea, peritoneum, mesentary, amino acids, enterkinase, and maltase.

## LABORATORY EXERCISES

Experiments pages 252-253

KEY

1. F
2. T
3. F
4. T
5. T
6. T
7. F
8. F
9. Digestive glands
10. Catalysts
11. Chemical
12. Mastication of food
13. Thirty-two
14. Dentin
15. Dentin
16. Blood vessels
17. Crooked teeth
18. Throat
19. Stomach
20. Protein
21. Chyme
22. Secretin
23. Flesh eating
24. Vegetarian
25. "All-eating"
26. Three
27. Starches
28. Purification
29. Fats
30. Urea
31. Liver
32. Cirrhosis
33. Circulation
34. Digestive glands
35. Peristalsis
36. Intestional juice
37. Intestional cells
38. Pancreas
39. Liver
40. Teeth
41. Salivary glands
42. Pharynx

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43

Multiplier 2.32

## SECTION XII

### THE HYGIENE OF NUTRITION

Read pages 254-284

T F 1. Man was originally furgivorous.

T F 2. Emotions affect digestion.

T F 3. It is best to eat cereals in the raw state.

T F 4. Gluten is the starch of the grain.

T F 5. Frying meat is the proper way to cook it.

T F 6. Nuts are a highly concentrated food.

T F 7. Milk is digested better when chewed.

T F 8. Eggs should be cooked in water just below the boiling point.

T F 9. People should use much discretion in using patent medicines.

T F 10. Whole wheat bread is stimulating to peristalsis.

11. The four most important grains are wheat, oats, corn and _____.

12. Fear and anger alter the character of our _____.

13. Cellulose has the same chemical composition as _____.

14. The three kinds of flour are white, whole wheat, and _____.

15. The four chemical classes of foods are carbohydrates, proteins, fats and _____.

16. The protein of the grain is called, (1) starch; (2) gluten; (3) iron. ( )

17. (1) Much; (2) little; (3) no water, should be drunk with our meals. ( )

18. The frying pan is, (1) a desirable; (2) undesirable; utensil of the home. ( )

19. Starchy food should be mixed with, (1) saliva; (2) gastric juice (3) pepsin; for proper digestion. ( )

20. Bread should be cooked in, (1) hot; (2) warm; (3) slow oven. ( )

## SUPPLEMENTARY EXERCISES

21. Write a short biography of Pavlov, the great Russian physiologist.

22. Write a paragraph on man's original resources and how they have been enlarged.

23. Describe yeast plants.

24. Why is it so important to get all wastes out of the body?

25. What are the three points to be noted when one is over weight? The six points when one is under weight?

## LABORATORY EXERCISES

Experiments page 286

## KEY

1. T
2. T
3. F
4. F

5. F
6. T
7. T
8. T
9. T
10. F
11. Rice
12. Digestion
13. Starch
14. Graham
15. Minerals
16. Gluten
17. Little
18. Undesirable
19. Saliva
20. Slow oven

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 23 25

Multiplier 4

## SECTION XIII

### THE CIRCULATION OF THE BLOOD

Read pages 287-317

T F 1. The red corpuscles are the scavengers of the body.

T F 2. Reduction in the amount of white corpuscle is known as anemia.

T F 3. Coagulation and clotting of the blood are synonymous.

T F 4. Plasma is the solid part of the blood.

T F 5. The right half of the heart receives the dark blood from the body.

6. The two kinds of corpuscles are _____ and _____.

7. The substances of the red corpuscles which unites with oxygen is _____.

8. The power of the corpuscles to destroy organism in the body is _____.

9. The gases present in the blood are carbon dioxide, oxygen, and _____.

10. The proteins are represented in albumin, and _____.

11. The fibers entangling the corpuscles causing them to clot are _____.

12. The blood goes out from the heart through the arteries returns through the _____.

13. The places where the blood begins its return journey are the _____.

14. The left half of the heart receives the blood from the _____.

15. The arteries take impure blood from the heart to the _____.

16. The blood from the head and arms returns through the, (1) inferior vena cava; (2) superior vena cava; (3) diastole; (4) systole. ( )

17. The blood from the lower parts returns through the, (1) diastole; (2) superior vena cava; (3) systole; (4) inferior vena cava. ( )

18. The artery carrying blood to nearly all parts of the body is the, (1) diastole; (2) superior vena cava; (3) aorta; (4) inferior vena cava. ( )

19. The heart has, (1) three; (2) two; (3) five; (4) four chambers. ( )

20. Identify; endocardium, endothelium, pericytes, and vasomotor.

| | | |
|---|---|---|
| 21. Diastole | _____ | blood pressure |
| 22. Bacteriolysins | _____ | clotting of the blood |
| 23. Agglutinins | _____ | to dissolve bacteria |
| 24. Precipitins | _____ | to prepare as food for |
| 25. Opsonins | _____ | to cause to precipitate |
| 26. Coagulation | _____ | to produce a cluster |

27. Heart _____ relaxation
28. Capillaries _____ contraction
29. Systole _____ where osmosis occurs
30. Sphygmomanometer _____ pump
31. Vagus _____ vasomotor center
32. Medulla oblongata _____ the heart rate

SUPPLEMENTARY EXERCISES

33. Compare the circulation of the blood to a city water system.
34. Give the composition of the blood.
35. What is meant by the diseases of the heart?
36. Why is there a need for modifying the blood pressure and flow?

LABORATORY EXERCISES

Experiments Page 317

KEY

1. F
2. F
3. T
4. F
5. T
6. Red, white
7. Haemoglobin
8. Germicidal
9. Nitrogen
10. Globulin
11. Fibrin
12. Veins
13. Capillaries
14. Lungs

15. Lungs
16. Superior vena cava
17. Inferior vena cava
18. Aorta
19. Four
21. Sphygmomanometer
22. Coagulation
23. Bacteriolysins
24. Opsonins
25. Precipitins
26. Agglutinins
27. Diastole
28. Systole
29. Capillaries
30. Heart
31. Medulla oblongata
32. Vagus

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
24 25 26 27 28 29 30 31 32

Multiplier 3.12

## SECTION XIV

## THE CIRCULATION OF THE BLOOD

(Concluded)

Read pages 317-335

T F 1. The heart works about a half a second and rests about a half a second.

T F 2. The work of the heart is aided by the valves in the arteries.

T F 3. Man's artifical exercises are as good as those which nature gives him.

T F 4. The circulation of the blood is aided when one lies down.

T F 5. The blood plasma is called chyme after it passes from the capillaries to the lymph spaces.

T F 6. The thoracic duct is about a forth of an inch in diameter.

7. The blood flows by the aid of the heart and _____.

8. The work done by the heart in a course of the body is equivalent to raising a ton of coal_____.

9. Muscular contraction acts like a pump forcing the blood through the _____.

10. The lymphatic system is distributed over the entire _____.

11. The food of the plasma must pass through the _____ to bring food to the cells.

12. The spaces between the cells of tissue are called _____.

13. The blood vessels have no beginning, but they make a _____.

14. The largest of all the lymphatics is the _____.

15. The lymph is caused to flow by all _____ movements.

16. The great aid and powerful effect of muscular work upon health is the benefical benefits it gives to the _____ and venous circulations.

17. Lymph serves as the "middle man" between the blood and the _____.

18. The worn out corpuscles are destroyed in the _____.

19. It is during _____ when the worn out corpuscles are replaced.

20. Calmness and poise have _____ upon circulation.

21. The blood flows in the capillaries is about, (1) one one hundreth; (2) one thirtieth; (3) one two hundredth; of an inch per second. ( )

22. White corpuscles are formed in the, (1) blastula; (2) mesentary; (3) spleen; (4) vagus. ( )

23. Identify: Hemorrhage, varicose vein, hardening of the arteries, "tobacco heart."

SUPPLEMENTARY EXERCISES

24. What does the lymphatic system comprise?

25. Describe the origin and course of the lymphatics.

26. What is the importance of good circulation?

27. Under what conditions do we take colds?

28. Summarize the effects of alcohol upon the system.

29. How is the blood freed from impurities?

## LABORATORY EXERCISES

Experiments pages 337-338

## KEY

1. T
2. F
3. F
4. T
5. F
6. T
7. Muscular contraction
8. Two hundred feet
9. Veins
10. Body
11. Capillaries
12. Lymph spaces
13. Never ending circle
14. Thoracic duct
15. Bodily
16. Lymphatic
17. Cells
18. Spleen
19. Sleep
20. Wholesome effects
21. One thirtieth
22. Spleen

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22

Multiplier 4.54

## SECTION XV

### RESPIRATION

Read pages 340-371

T F 1. The waste products would destroy the cell life of tissue if not removed.

T F 2. The terms esophagus and trachea are synonymous.

T F 3. Inspiration is the passing of air out of the lungs.

T F 4. Expiration is the passing of air into the lungs.

T F 5. The upper chest breathing is costal breathing.

6. The waste products are removed by the same organs that supply _____.

7. Respiration includes _____ and expiration.

8. The expansion and contraction of the lower chest is _____.

9. The air we breathe is about twenty parts oxygen, eighty parts nitrogen, and _____ carbon dioxide.

10. Inhaling tobacco smoke inflames the _____ of the bronchials.

11. The best method of breathing is, (1) chest; (2) natural; (3) abdominal. ( )

### SUPPLEMENTARY EXERCISES

12. Discuss the breathing apparatus in different animals.

13. Describe the lungs including the lining.

14. How is the circulation aided by breathing?

15. Tell something about the hygiene of respiration.

16. What is necessary in proper ventilation?

17. List the three essentials in the prevention of Tuberculosis.

18. Summarize the section, the essential unity of body and mind.

LABORATORY EXERCISES

Experiments pages 369-371

| | | |
|---|---|---|
| 19. | Bronchi | _____ lid |
| 20. | Pharynx | _____ gullet |
| 21. | Trachea | _____ thin membrane |
| 22. | Esophagus | _____ fresh air |
| 23. | Epiglottis | _____ circulation, dryness high temperature |
| 24. | Plurae | _____ voice box |
| 25. | Ozone | _____ throat |
| 26. | "Badness" in air | _____ windpipe |
| 27. | Larynx | _____ lungs |

KEYS

1. T
2. F
3. F
4. F
5. T
6. Oxygen
7. Inspiration
8. Abdominal breathing

9. 0.04
10. Mucus lining
11. Natural breathing
19. Epiglottis
20. Esophagus
21. Plurae
22. Ozone
23. "badness" in air
24. Larynx
25. Pharynx
26. Trachea
27. Bronchi

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Multiplier 5

## SECTION XVI

### THE NERVOUS SYSTEM

Read pages 372-407

T F 1. The seat of the central controlling power is located in the spinal cord.

T F 2. The sponge has special cells for carrying impulses.

T F 3. The nerve cells with their branches are called nerve fibers.

T F 4. Nerve cells are the most remarkable for their irregularity of shape.

T F 5. Dentrites carry impulses to the brain.

T F 6. A branch of one nerve cell does not join the branch of another cell.

T F 7. Neuroglia is the tissue holding together the fibers and cells of the white and gray matter.

T F 8. If a nerve is cut the ends will not grow together again.

T F 9. It often requires years of constant effort to root out bad habits.

10. Receiving, modifying, and sending out impulses by the nerve cells is _____.

11. Nerve cells are microscopic bits of _____ like other cells.

12. The tree like branches of nerves are _____.

13. Every nerve fiber has a core called _____.

14. A bundle of nerve fibers is a _____.

15. A bundle of nerve fibers is a _____.

16. The term ganglion refers to _____.

17. While the term nerve center refers to _____.

18. Nerve substance is classified as grey and _____ matter.

19. The cranial division of the autonomic system serves to _____ the body.

| | | |
|---|---|---|
| 20. Axon | _____ | out bearing |
| 21. Connective sheath | _____ | gray fibers |
| 22. Medullary fibers | _____ | central nervous system |
| 23. Medullary fibers | _____ | sense-perception, reason |
| 24. Non medullary fibers | _____ | inflammation |
| 25. Terminal arborizations | _____ | colon, rectum, and bladder |
| 26. Afferent neurons | _____ | outside protective covering |
| 27. Efferent neurons | _____ | white fibers |
| 28. Brain and spinal cord | _____ | tuft of small branches |
| 29. "itis" | _____ | semi-liquid fatty substance |

30. Sacral division _____ in bearing

31. Cerebrum _____ nerve fiber core

32. There are, (1) two; (2) four; (3) three; (4) five; chief groups of neurons. ( )

33. The place of connection between neurons is a, (1) periphery; (2) axon; (3) terminal arborization; (4) synapse. ( )

34. When a nerve becomes inflammed the disease is called, (1) gastritis; (2) meninges; (3) neuritis; (4) neuroglia. ( )

35. The spinal cord has a, (1) triple; (2) double; (3) single covering. ( )

36. When the neurons are grouped in ganglia they are called, (1) axons; (2) lochrymal; (3) meninges; (4) plexus. ( )

37. The thin layer of gray matter covering the brain is known as, (1) cortex; (2) medullary sheath; (3) medullary fibers; (4) lochrymal. ( )

## SUPPLEMENTARY EXERCISES

38. Identify: Neuritis, tonsilitis, and gastritis.

39. What are the functions of the autonomic system?

40. Describe the cerebrum.

41. Describe the cerebellum.

42. Describe the medulla oblongata.

KEY

1. F
2. F
3. T
4. T
5. F
6. T
7. T
8. F
9. T
10. Cooridination
11. Protoplasm
12. Dentrites
13. Axon
14. Neurone
15. Nerve
16. Structure
17. Function
18. White
19. Protect
20. Efferent neurons
21. Non medullary fibers
22. Brain and spinal cord
23. Cerebrum
24. "itis"
25. Sacral division
26. Connective sheath
27. Medullary fibers
28. Terminal arborizations
29. Medullary sheath
30. Afferent neurons
31. Axon
32. Three
33. Synapse
34. Neuritis
35. Triple
36. Plexus
37. Cortex

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32 33 34 35 36 37

Multiplier 2.7

1. T
2. T
3. T
4. T
5. F
6. T
7. T
8. F
9. T
10. Coordination
11. Protoplasm
12. Dendrites
13. Axon
14. Neurons
15. Nerve
16. Structure
17. Function
18. White
19. Protect

## SECTION XVII

### HYGIENE OF THE NERVOUS SYSTEM

Read pages 408-422

T F 1. Sleep is deepest during the sixth hour.

T F 2. A nap of fifteen minutes after lunch is beneficial.

T F 3. Alcohol is more destructive to nerve cells than to any other kind.

T F 4. Insanity usually develops quickly.

T F 5. Opium, morphine, and cocaine cause a large proportion of insanity.

T F 6. Communicable diseases often leave the nervous system injured.

T F 7. It is dangerous to one's health to brood and pout.

T F 8. "It is not hard work that kills a man; it is worry."

9. If consciousness is partly present during sleep the condition is known as _____.

10. If the sleeper walks or talks as he sleeps it is known as _____.

11. For a sound nervous system, nothing is so important as plenty of _____.

12. Inability to sleep is known as _____.

13. The taking in of food by the body cells is _____.

14. A cheerful, optomistic, and friendly disposition may be trained and _____.

15. What is the connection between body and mind?

16. What is the effect of activity upon the nervous system?

17. How does one learn?

18. What are the two points of view from which self control may be explained?

LABORATORY EXERCISES

Experiments pages 424-426

KEY

1. F
2. T
3. T
4. F
5. T
6. T
7. T
8. T
9. Dreaming
10. Somnambulism
11. Sound sleep
12. Insomnia
13. Assimilation
14. Achieved

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Multiplier 7.14

## SECTION XVIII

### SENSATIONS AND THE SPECIAL SENSES

Read pages 427-454

T F 1. Cross-eyes are caused by too much contraction of the external straight muscle.

T F 2. The lachrymal gland and the tear gland are synonymous.

T F 3. Wall-eyes are caused by too much contraction of the internal straight muscle.

T F 4. Cross-eyes and wall-eyes may be remedied by a skillful surgeon.

5. The exposed surface of the eye is the _____.

6. When the eye ball is too flat _____ results.

7. Unequal curvature of the cornea causes _____.

8. In farsightedness _____ lens are used.

9. In nearsightedness _____ lens are used.

10. When reading the light should come to the paper over the _____.

| | | |
|---|---|---|
| 11. | Iris | _____ posterior cavity |
| 12. | Lens | _____ vision is clearest |
| 13. | Sclerotic coat | _____ place where iris begins |
| 14. | Choroid | _____ lines posterios cavity |
| 15. | Cornea | _____ white connective tissue |

16. Aqueous humor _____ moddle coat

17. Vitreous humor _____ semi-solid crystaline substance

18. Retina _____ covering the front of the eye

19. Suspensary ligament _____ muscular diaphraym

20. Yellow spot _____ anterior cavity

21. Concha _____ three little bones

22. Meatus _____ equilibrium

23. Tympanic membrane _____ endings of the nerve

24. Hammer, anvil, and stirrup _____ drum

25. Eustachian tube _____ cartilaginous

26. Cochlea _____ canal

27. Semicircular canals _____ pharynx

## SUPPLEMENTARY EXERCISES

28. Identify: The blind spot, myopic, hypermeteropic.

29. Classify the senses.

30. Describe the sense of taste.

31. Describe the sense of smell.

32. What is trachoma?

33. What is meant by the line of accomodation?

## LABORATORY EXERCISES

Experiments pages 452-454

KEY

1. F
2. T
3. F
4. T
5. Conjunctiva
6. Farsightedness
7. Astigmatism
8. Convex
9. Concave
10. Left shoulder
11. Vitreous humor
12. Yellow spot
13. Suspensary ligament
14. Retina
15. Sclerotic coat
16. Choroid
17. Lens
18. Corena
19. Iris
20. Aqueous humor
21. Hammer, amvil, and atirrup
22. Semi-circular canals
23. Cochlea
24. Tympanic membrane
25. Concha
26. Meatus
27. Eustachian tube

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27

Multiplier 3.7

## SECTION XIX

### SOME SPECIAL REGULATIVE PROCESSES

Read pages 455-471

T F 1. There is a close correlation between the stomach and the mouth in digestion.

T F 2. The thyroid gland is located on the top of the kidney.

T F 3. Removal of the thyroid gland of young people causes interference with growth.

T F 4. The thymus gland is located in the neck.

T F 5. In a sense all food is a regulator of activity.

T F 6. The body cannot be injured without a comparable injury to the mind.

T F 7. Early man conveyed his ideas by what we call pantomine today.

T F 8. The range of the human voice is about two octatives.

9. Heat is secured in the body by _____ of food materials.

10. The adrenal glands are located just above the _____.

11. These glands are stimulated to activity by the effect of emotion and _____.

12. There are many internal secretions or _____.

13. Children lacking in thyroid are known as _____.

14. The thyroid secretion regulates the growth and development of the physical and _____ abilities.

15. Deficiency of iodine in the diet causes an enlargement of the thyroid called _____.

16. The suggestive role of the thyroid is the development of the adult _____.

17. The adrenal glands respond to _____ stimulation.

18. The pituitary gland is located at the base of the _____.

19. The secretion of the pituitary regulates growth and _____.

20. There are, (1) three; (2) five; (3) two; (4) four; ways in which the body looses its heat. ( )

21. The temperature of the body is, (1) 96.8; (2) 98.6; (3) 89.6; (4) 86.9. ( )

22. Cretinism is found in, (1) adolescence; (2) old age; (3) adults; (4) children. ( )

| | | | |
|---|---|---|---|
| 23. | Adrenal | _____ | slit |
| 24. | Thyroid | _____ | lid of the voice box |
| 25. | Goiter | _____ | raising blood pressure |
| 26. | Thymus | _____ | adult characteristics |
| 27. | Adrenals | _____ | inadequate growth |
| 28. | Pituitary | _____ | deficiency of iodine |
| 29. | Larynx | _____ | Adam's apple |
| 30. | Epiglottis | _____ | size of the individual |
| 31. | Glottis | _____ | unusual physical power |

## SUPPLEMENTARY EXERCISES

32. What are the two ways in which the agency for the regulation of heat works?
33. Heat is lost from the body in what ways?
34. What is the function of the voice?
35. What do we mean by pitch, volume, and quality?
36. Summarize the section, the culture of the voice.
37. Summarize the section, the vocal instrument.
38. Summarize the section, the resonant chambers.

## KEY

1. T
2. F
3. T
4. F
5. T
6. T
7. T
8. T
9. Oxidation
10. Kidneys
11. Anger
12. Autocoids
13. Cretins
14. Mental
15. Goiter
16. Characteristics
17. Emotional
18. Brain
19. Cellular activity
20. Four
21. 98.6
22. Children
23. Glottis
24. Epiglottis
25. Adrenal
26. Thymus
27. Thyroid
28. Goiter

29. Larynx

30. Pituitary

31. Adrenals

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

24 25 26 27 28 29 30 31

Multiplier 3.22

## SECTION XX

### BACTERIA, PROTOZOA, AND DISEASE

Read pages 473-512

T F 1. Pathgenic bacteria causes disease in man.

T F 2. The body of man has inherited the need for physical activity.

T F 3. Many bacteria play useful roles.

T F 4. Pathogenic bacteria belong to the useful group of bacteria.

T F 5. Protoza are bacteria.

T F 6. Protoza generally gain entrance directly into the body.

T F 7. The Bubonic plague and Black Death are synonymous.

T F 8. Bubonic plague caused about a million deaths in the United States about 1890.

9. Bacteria reproduce by _____.

10. The three conditions favorable for reproduction of bacteria are heat, food, and _____.

11. There are two main groups of microorganisms, bacteria, and _____.

12. Pathogenic bacteria produce poisons called _____.

13. Most communicable diseases are produced by _____.

14. The bacteria causing tuberculosis is the _____.

15. The bacillus causing Bubonic plague is transmitted by the _____.

16. People get malaria only through the bite of a _____.

17. Rabies are also called _____.

18. Germs are killed when milk is _____.

| | | |
|---|---|---|
| 19. | Bacteria | _____ sleeping sickness |
| 20. | Pathogenic bacteria | _____ spiral like |
| 21. | Bacilli | _____ scarlet fever |
| 22. | Protozoa | _____ germ theory of disease |
| 23. | Cocci | _____ protective substance |
| 24. | Germ | _____ animal kingdom |
| 25. | Spirilla | _____ hair like process |
| 26. | Flagella | _____ malaria |
| 27. | Spore | _____ diphtheria |
| 28. | Trypanosome | _____ plant kingdom |
| 29. | Anapheles | _____ spherical |
| 30. | Pasteur | _____ rabies treatment |
| 31. | Koch | _____ smallpox vaccimation |
| 32. | Antitoxins | _____ protective covering |
| 33. | Schick test | _____ causes disease in man |
| 34. | Dick test | _____ bacteria and protozoa |
| 35. | Dr Jenner | _____ rod shaped |

SUPPLEMENTARY EXERCISES

36. Summarize the section, malaria and its control.

37. Summarize Kock's idea of the germ theory.

38. What is meant by the throat culture? Why is it so important?
39. Why has vaccination proven to be a success?
40. List the condition of three foods from which we get poisoned.
41. List five physical agents from which our bodies may be harmed.

KEY

1. T
2. T
3. T
4. F
5. F
6. F
7. T
8. F
9. Cell division
10. Moisture
11. Protozoa
12. Toxins
13. Pathogenic
14. Tubercle Bacilli
15. Rat flea
16. Mosquito
17. Hydrophobia
18. Pasteurized
19. Trypanosome
20. Spirilla
21. Dick Test
22. Koch
23. Antitoxin
24. Protozoa
25. Flagella
26. Anopheles
27. Schick Test
28. Bacteria
29. Cocci
30. Pasteur
31. Dr. Jenner
32. Spore

33. Causes disease in man 35. Bacilli

34. Germ

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

24 25 26 27 28 29 30 31 32 33 34 35

Multiplier 2.86

## SECTION XXI

### THE EFFECTS OF ALCOHOL AND TOBACCO

Read pages 513-530

T F 1. Artificial stimulants give a false stimulation.

T F 2. Artificial stimulants keep our vital forces and reserve energy at low ebb.

T F 3. A pleasant talk with a friend is a better sedative than a cigar.

T F 4. The abandonment of education about alcohol is one of the chief factors in the failure of prohibition.

T F 5. Scientific men generally classify alcohol as a food.

T F 6. Food is a substance which nourishes the body without injury to it.

T F 7. True food burns in the blood.

T F 8. The body needs a fast burning food.

9. Man's chief natural stimulants are sunlight, pure air, physical exercise, interest, joy, and _____.

10. The best thing for fatigue is _____.

11. The only source of energy for the body is the union of food and _____.

12. A cold day will steady the nerves better than an _____.

13. Natural stimulants do not produce a reaction because

they do not excite the body to an _____ degree.

14. The United States had national prohibition for _____ years.

SUPPLEMENTARY EXERCISES

15. Discuss alcohol as a food.

16. Discuss alcohol as a poison.

17. Summarize the effect of alcohol on the body.

18. Summarize the section, the general effects of tobacco.

KEY

1. T
2. T
3. T
4. T
5. F
6. T
7. F
8. F
9. Cold air
10. Rest
11. Oxygen
12. Opiate
13. Injurious
14. Thirteen

1 2 3 4 5 6 7 8 9 10 11 12 13 14

Multiplier 7.14

## SECTION XXII

### HEALTH PROBLEMS OF THE MACHINE AGE

Read pages 531-542

T F 1. Satisfaction in what one does is essential for health and happiness.

T F 2. Monotony influences fatigue.

T F 3. Silicosis is the lung condition of gold miners.

T F 4. Chalicosis is the lung condition of metal workers.

5. Fatigue is the natural results of _____.

6. Noise enhances _____.

7. The black lung condition of the coal miner is _____.

8. The lung condition of the metal worker is _____.

9. The gray black lung condition of the stone cutter is _____.

10. The lung condition of the gold miner is called _____.

11. The disease most commonly caused by the dusty trades is _____.

### SUPPLEMENTARY EXERCISES

12. What important measures should be used to prevent industrial poisoning?

13. Summarize the section, accident prevention.

14. Discuss "Health Service" in some of the industries.

15. How can states regulate industry? The legislation to

regulate or protect workers falls into what three groups?

KEY

1. T
2. T
3. F
4. F
5. Activity
6. Fatigue
7. Anthrocosis
8. Siderosis
9. Chalicosis
10. Silicosis
11. Tuberculosis

1 2 3 4 5 6 7 8 9 10 11

Multiplier 9.1

## SECTION XXIII

### THE MODERN VIEW OF HEALTH

Read pages 543-553

1. Summarize the section, the nature of man.
2. List the main problems ahead of man today.
3. Summarize the paragraph, "The Whole of Life."
4. Name and tell something about the three stages of man's development.
5. What is meant by the person and his situation?
6. What custom has been of most importance to man?

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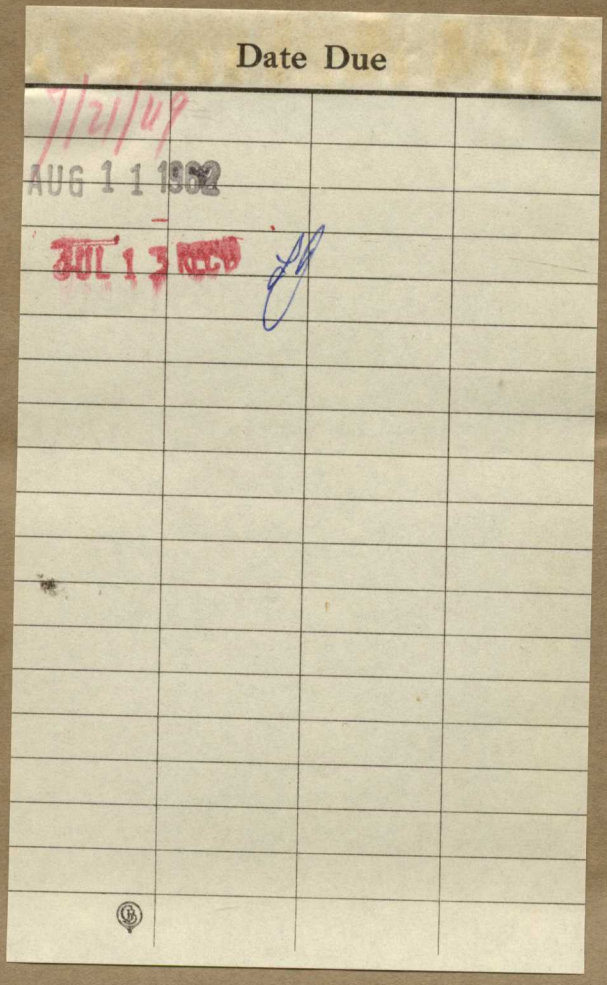

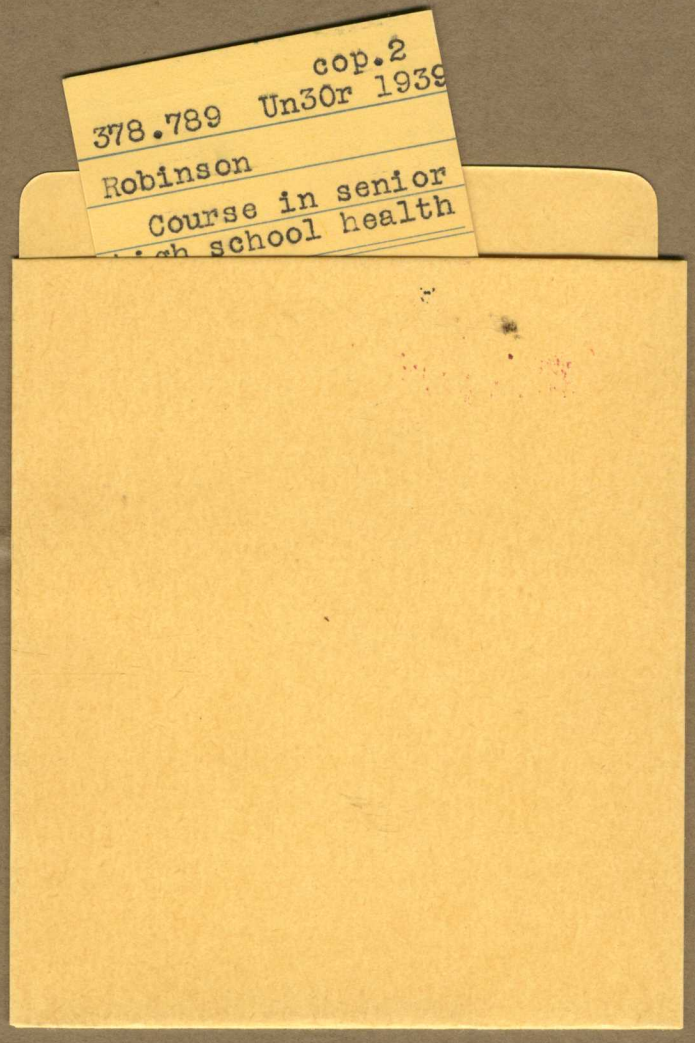


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