THE WESTERN SAND CHERRY.

Most eastern readers are well acquainted with the low, much-branched shrub known as the sand cherry (*Prunus pumila*), and bearing small fruits which have a thin flesh. Probably few of them are familiar with the western sand cherry (*Prunus besseyi*) which grows on the prairies and great plains from Manitoba and Minnesota to Nebraska and Kansas. The latter has a much larger, short-stalked cherry, which has a colored, juicy flesh. The plants of the two species are much alike, but there are constant differences in habit and fruit sufficient to warrant their separation. For practical purposes the two are very distinct, the western species, even in the wild state, being valuable for culinary purposes.

In a recent bulletin (No. 87) of the North Dakota Experiment Station, Professor Hanson makes a discussion of this fruit, giving the results of his experiments extending over fourteen or fifteen years. These may be summarized as follows:

1. It is exceedingly variable in the size and quality of its fruit, but all forms are acceptable for culinary use.

2. From them 100 varieties have been selected, and are now under propagation. Some of these bear fruit from three fourths to seven eighths inches in diameter and of a quality acceptable for eating without cooking.

3. It hybridizes readily with at least three other species.

4. Seedlings bear fruit in the third year.

5. "After fruiting many thousands of seedlings it appears reasonable to believe that in this species we have a bush cherry that can be raised to advantage upon the most exposed prairies."

As to the present value of this species, Professor Hansen says:

1. "It is a native northwestern prairie fruit worthy of being tamed and transferred to the small fruit garden."

2. "It is yet in the early stages of development; too much must not be expected at first."

3. "Even unselected seedlings are not to be despised in the drier regions of the northwest, where the small fruits of the eastern states are usually a failure."

4. "At least one of its hybrids (the 'Compass,' = Sand Cherry × Miner Plum) is worthy of a place in the home garden, and may be considered the forerunner of a new race of fruits."

5. "Propagators will find the sand cherry worthy of attention as a stock in winter root-grafting of the native plum."

6. "For orchard houses and amateur plantations it can be used to advantage, as a dwarf stock for plums, peaches, apricots and some other stone fruits."

7. "It is worthy of a place on the list of desirable low ornamental shrubs for the foreground in clumps of larger-growing species."

The professor's experience with the sand cherry has been so favorable that he ventures the following predictions:

1. "It will be found of great value in the commercial propagation of some of the stone fruits."

2. "From it will be developed by selection a race of bush fruits with fruits equal to California cherries in size, and of quality acceptable for table use."

3. "From it will be developed a race of hybrid fruits of a new type by hybridizing with choicer fruits: these new creations will be hardy and fruitful on the most exposed prairies."

Charles E. Bessey.
The University of Nebraska.

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*COLLEGE-ENTRANCE OPTION IN ZOOLOGY.**

The following report will be presented to the American Society of Zoologists at the meeting at Philadelphia in December. It is published here in order to call forth criticisms and suggestions from schools and colleges which have not been reached through correspondence. Communications relating to the report may be handed to any member of the undersigned committee, or addressed to the chairman at Teachers College, Columbia University.

Believing that zoology should have a place in general liberal education and recognizing that for the great majority of citizens formal

* Report of a committee appointed by the American Society of Zoologists.

education must end with the secondary school, it is the opinion of this committee (1) that this science should be taught in high schools for the benefit of pupils who will have no other opportunity of acquiring general knowledge of animals; and (2) that zoology thus taught from the point of view of general secondary education should have recognition as a college-entrance option, in order that pupils who can not decide to go to college before the close of high-school work may not be held deficient in credits because zoology was elected. But, although thus recognizing zoology from the standpoint of secondary education, this committee wishes to emphasize the opinion that zoology is not one of the most desirable subjects as preparation for college; and that the physical sciences should first of all be recommended to pupils who expect to go to college.

In reaching these conclusions the committee has not failed to consider the value of general acquaintance with common animals and with the essential principles of the elementary physiology and hygiene of the human body, but these are commonly taught in the years below the second of high school, and work in these lower years does not in the case of other subjects closely concern the question of college-entrance options.

These preliminary statements will make it clear that the following suggestions for a scheme of college-entrance credits in zoology are intended by this committee simply to provide for crediting the zoology which should be elective in every good general high school, but not to advocate the subject as one which from the college standpoint is desirable in preparation for college. In other words, this committee is simply recommending that zoology studied as part of a liberal secondary education intended primarily to prepare for life should be recognized as preparing for entrance to college (the minor question of preparation for entrance to college courses in zoology being here laid aside).

General Statement of Options.—(*a*) One-point option. To count as one unit or point in thirteen to fifteen required for entrance to college. This should consist of one year of at least five hours per week devoted to study of zoology, as indicated in outline of course given below.

(*b*) Half-point option (one point in biology). To count as one half unit in thirteen to fifteen required, only when a half unit of botany taken in the same continuous course is offered to complete a full unit in biological science. A half year of zoology independent of botany should not be accepted.

A two-point option is not recommended, because more than one full year in zoology is extreme specialization which no secondary school can properly undertake.

Outline for the One-Point Option in Zoology.—The following outline includes the principles of zoology which are indispensable to a general survey of the science. It is not intended to indicate order of study of the topics—this must be left to the teacher and the text-book. With little modification the courses presented in general books such as Needham's, Kingsley's, Kellogg's and Colton's (revised) cover the ground outlined below.

1. The general natural history—including general external structure in relation to adaptations, life histories, geographical range, relations to other plants and animals, and economic relations—of at least one animal of each prominent order of vertebrates and one of each prominent class of invertebrates so far as representatives of these groups are obtainable in the locality where the course is given. In the case of arthropods, pupils should become familiar with common crustaceans, spiders, myriapods, and insects representing at least five orders. Actual examination of common animals with reference to the above points should be supplemented by reading giving natural-history information equivalent to that in recent books by Davenport, Jordan & Heath, or Kingsley.*

2. The classification of animals into phyla and leading classes (except the modern subdivisions of the worms) and the great characteristics of these groups. In the case of in-

* A large part of this natural-history information will be gained from the nature-study of the elementary school and from the course often given in the first year of high school.

sects and vertebrates the characteristics of the prominent orders. The teaching of classification should be by practical work so as to train the pupil to recognize animals and to point out the chief taxonomic characteristics. The meaning of species, genera and larger groups should be developed by constructive practical work with representatives of insect or vertebrate orders.

3. The general plan of internal structure, not the anatomical minutiæ, of one vertebrate (preferably frog or fish) in general comparison with human body; an arthropod (preferably a decapod); an annelid (earthworm or Nereis); a cœlenterate (hydroid, hydra or sea-anemone); a protozoon (a ciliate, and amœba when possible). In place of any of above types not locally available there may be substituted a second vertebrate, an insect or an echinoderm. Tissues should be examined first with the unaided eye, in such a structure as a frog's leg, and then with a microscope demonstrate the relations of cells and intercellular substance in epithelium and cartilage; and, if possible, in other tissues. The functions of the chief tissues and their positions in the body of a vertebrate should be pointed out.

4. (*a*) The general physiology of above types, involving the essentials of digestion, absorption, circulation (respiration), cell-metabolism, secretion, excretion and nervous functions. This should apply comparatively the essentials of elementary work in human physiology (see chapters 8, 9 and 10 in Martin's 'Human Body, Briefer Course'). Demonstrations and experiments, such as are suggested in high-school text-books on human physiology, should be introduced, or recalled if not previously well presented in elementary physiology, in connection with the discussion of the chief functions. As far as practicable structure and function should be studied together.

(*b*) Comparison of the general life-processes in animals and plants (in connection with botany if zoology is first studied).

5. The very general features of asexual reproduction of a protozoon (preferably *Paramœcium*); alternation of generations in hydroids; reproduction and regeneration of *Hydra;* the very general external features of embryological development in a fish or frog; and the general cellular nature (not centrosomes and the like) of germ-cells, fertilization and cell division in developing eggs should, as far as possible, be demonstrated and briefly described. Also, the most interesting features of development should be pointed out in the case of other animals studied. (The limited microscopic work suggested above might all be carried out with only one microscope for demonstrations.)

6. The prominent evidences of relationship, suggesting evolution, within such groups as the decapods, the insects and the vertebrates, should be demonstrated. A few facts indicating the struggle for existence, adaptation to environment, variations of individuals and man's selective influence should be pointed out; but the factors of evolution and the discussion of its theories should not be attempted.

7. Some leading facts regarding the epoch-making discoveries of biological history and the careers of such eminent naturalists as Darwin, Huxley, Pasteur and Agassiz should be presented.

The above outline of a course in general zoology should be developed on the basis of a course of laboratory study guided by definite directions. This should be supplemented by the careful reading of at least one modern elementary text-book in general zoology. At least two thirds of the time should be devoted to the practical studies of the laboratory. If good nature-studies have not preceded the course in high-school zoology, pupils should be encouraged to do supplementary work in the line of natural history. A note-book with carefully labeled outline drawings of the chief structures studied, and with notes on demonstrations and in explanation of drawings, with dates and an index, must be submitted, properly certified by the teacher, at the time of the examination. It will be graded as one third of the examination.

The question whether a course as outlined above should admit students to the second college course in zoology is one which must be answered by each college for itself. It is

quite unimportant so far as accepting an entrance option in zoology is concerned, for the very few pupils who study the science in high school and later in college have special interests which make adjustment of their college work easy.

Outline for the Half-Point Option.—(1) The general natural history specified above. (2) The classification of animals specified above. (3) The general internal structure of one vertebrate and a decapod or annelid. (4) The physiology of these two animals along the lines suggested above, with special application to the functions of the human body, and comparison with the general functions of plants. (5) The general external embryology of frog as suggested above.

Committee: C. M. CLAPP,
E. G. CONKLIN,
C. W. HARGITT,
J. S. KINGSLEY,
M. A. BIGELOW, *Chairman.*

THE JOHN BELL SCOTT MEMORIAL OF WESLEYAN UNIVERSITY.

THE John Bell Scott Memorial, the physical laboratory of Wesleyan University, was dedicated on December 7. The building was presented on behalf of the building committee by Dr. H. C. M. Ingraham and a response was made by President Raymond. The principal address was made by Dr. Edward B. Rosa, formerly professor of physics at Wesleyan University and now physicist of the National Bureau of Standards. The address, which will be published in SCIENCE, was on 'The National Bureau of Standards in Relation to Scientific and Technical Laboratories.'

The John Bell Scott Memorial is a gift to Wesleyan University from the late Charles Scott, of Philadelphia, and his son Charles Scott, who died from disease contracted while serving as chaplain of the U. S. Cruiser *St. Paul,* during the Spanish-American War. The building is a handsome structure of Harvard brick and Indiana limestone, the architect being Mr. Charles A. Rich, of New York City, well known in college circles for his exceptional success as the architect of the splendid new group of college buildings at Dartmouth. The main part of the building is 102 x 51 feet on the ground plan, and this part consists of basement, three stories and attic. In addition there is an extension of 50 x 30 feet in the rear which has basement and two stories. The lecture room is situated on the second floor, running out into the extension, is 44 x 40 x 17 feet in size and seats nearly 200 persons. A smaller lecture room on the third floor has a seating capacity of about forty. There are in the building twenty-two rooms which are more distinctively for laboratory purposes, in addition to the lecture rooms, offices, photographic dark rooms, store rooms, apparatus rooms, etc. For experiments which require great vertical space, a tower has been provided about 4 x 6 feet in cross section and with a height of about 54 feet in the clear. The building is abundantly supplied with water and gas connections throughout and is exceptionally well equipped with a system of wiring for distributing to all points alternating and direct current from the city mains and also direct current from the storage battery room in the basement.

THE GERMAN METEOROLOGICAL AND MAGNETIC OBSERVATORY IN THE SAMOAN ISLANDS.

DR. FRANZ LINCKE, of Göttingen, Germany, has been appointed to take charge of the German Meteorological and Magnetic Observatory at Apia, Samoan Islands, thus relieving Dr. Tetens, who returns to Germany in order to reduce the records obtained during the past two years. This observatory is equipped with the most modern instruments for observations in meteorology, terrestrial magnetism, atmospheric electricity and seismology. In view of the important location of this station and the opportunity presented to supplement the data obtained at the Coast and Geodetic Survey Magnetic Observatory in the Hawaiian Islands, situated on the opposite side of the magnetic equator from that of the Samoan station, the German government has decided to further continue its observatory. It was the original intention to conduct the work only during the time of the German and British Antarctic expeditions.