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THE EDUCATIONAL LEADER

HEALTH AND PHYSICAL EDUCATION
and BIOLOGY NUMBER

Published by the Faculty of the
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Vol. 4 MARCH, 1941 No. 3

Old "Stone Academy" and Meeting House built by the Society of Friends (Quakers) in 1869, south of Pittsburg.

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The Educational Leader

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The EDUCATIONAL LEADER

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National Preparedness and Physical Education

GARFIELD WILSON WEEDE

Our general thinking in regard to a national preparedness program limits itself, usually, to the successful development of strong military units, the army, navy, marine, and air corps. These still remain the dominant aim in defense, but many related and contributory groups are receiving an emphasis today never before stressed in this nation. All agencies which have any bearing whatever on the effective consummation of this broader defense program are today being called upon to make their contribution.

When the urgent need for the nation to prepare itself became apparent the past year, federal authorities in Washington sent out a call to representatives of many lines of activity to attend a conference; out of that meeting have developed many measures, several of which, it is hoped, may help materially in meeting this broader emergency program. The public school educational representatives were one of the many groups challenged at this meeting; one phase of the general education program, that of physical education, was particularly stressed as having an important part to play in the future.

The physical education program in its early developmental days, two generations ago, was limited to formal gymnasium classes, looking towards normal body-building exercise only. Then athletics became a prominent part of its program. Of late the National Education Association has shouldered off to this branch of education the chief responsibility for health and recreation. It is chiefly on these newer phases of physical education that the national preparedness program today lays stress. The desire is to create a more universal health condition among all citizens.

Reports of recruiting offices show that 30 per cent of the volunteers for the present army were rejected during the past six months because of physical unfitness. Reports of recent army maneuvers in various parts of the country show also that in most instances the men participating were so soft physically that after sustained marches, many were unfit to continue. This shows the need for improved physical fitness for military service.

So far as the schools themselves are concerned, it is known that many children receive no health examinations; that in many states and localities no adequately prepared personnel is maintained to administer a health and physical education program; that thousands of children receive no instruction in physical education; and that in hundreds of places throughout the nation, the only program provided is confined to one of inter-school athletics for the few. This limited program must be extended to serve the needs of all pupils if universal results are to be attained. A broad recreation program is necessary to meet the present-day leisure-time needs of youth and adults, especially of youth, who are often easy prey to subversive influences that undermine physical and mental health.

At present, there is duplication and overlapping of effort among the various agencies concerned with education, welfare, and health of youth. At the same time, there are thousands for whom no adequate program is provided. If youth is to be served effectively, cooperation of all groups, both public and private, toward the desired end is one of the first needs. A proper coverage is essential; and there is great need for delineation and fixing of responsibility.

On Jan. 3, 1941, Congressman Pius L. Schwert of Buffalo, New York, introduced a bill in Congress, numbered H. R. 1074, which provides for this designation of responsibility and working agreements among all educational agencies concerned with welfare, health, conservation, and parks. This bill covers the plan for national preparedness through health, physical education, and recreation in schools and school camps as outlined by the National Education Association and the United States Office of Education in conference with a committee of physical education and recreation leaders.

An outline of this measure gives insight into the defense plans as they relate to physical education. The bill will make available $50,000,000 the first year, increasing to $100,000,000 in 1946, and annually thereafter, half of which will be used for improvement of local school programs and half for the establishment and development of school camp programs. Under the provisions of this bill, teachers will be trained and provided in those communities not now doing an effective job along health and physical education lines. Where equipment and supplies are inadequate, the plan is to furnish the supplies and materials needed.

The entire program briefly summarized calls for: (1) Health, protection, and guidance for all students including medical and dental treatment; (2) Health and safety instruction for all students; (3) Daily programs of physical activity of a developmental nature for all pupils —elementary grades through high school—involving correctives, class, intra-mural, and inter-school activities; (4) Recreation programs for children, youth, and adults of both sexes; (5) School camps under ade-

quate supervision for both boys and girls—separate camps being maintained for various age and sex groups from the age of five up to adult home-defense and industrial workers groups.

Many important questions have been raised regarding this bill and the answers to some of them, I believe, give a better picture of the provisions of the bill than any other method of discussion. Some of the questions and answers follow:

1. Does this Bill mean federal control? No, it has proper safeguards for local and state control.

2. May funds provided through this Bill be utilized for treatment of physical defects? No, treatment of defects is the responsibility of the home, welfare, and health agencies. Funds will be utilized for a follow-up program to bring those individuals with defects in contact with authorities responsible for treatment but only to secure action in correction of defects.

3. What groups may be served? The following groups will be served: (a) boys and girls of school age (ages 5 to 21); (b) out-of-school youth (ages 16 to 21); (c) draft-age group (ages 21 to 35), with special emphasis on pre-induction conditioning and morale; (d) home-defense and industrial-work groups (both sexes).

4. Will separate school camps be provided for both boys and girls? Yes, also for different age groups.

5. Will qualified camp supervision be provided? Yes. Standards of training will be required before certification is made of instructors.

6. Will provisions be made for handicapped children? Yes. Remedial cases will have special care.

7. Is provision made to cover nutrition cases? No. Instruction only. Dental Health? Instruction in dental hygiene only.

8. Does the Bill provide for athletic instruction for all children? Yes. In various age groups.

9. Does the Bill provide for a program for girls? Yes. An equitable division of staff, facilities, supplies, and equipment between boys and girls; it also means women teachers and supervisors for girls' activities.

10. Will special teachers of physical education be provided at the elementary school level? Yes, grades 3 to 12 inclusive.

11. Will special supervisors be provided? Yes, for all grades.

12. Will existing heavy pupil-teacher class loads be reduced? Yes. Some existing conditions are deplorable. Teachers cannot be expected to do an effective job of health development when teaching loads are too heavy.

13. Will the recreation program serve the leisure-time needs of children, youth, and adults? Yes, for all ages.

14. What is the purpose of instruction and training in physical activities provided for in the Bill? It is to develop a courageous, loyal, and physically fit citizenry with desirable social standards and democratic ideals.

15. Will the use of existing school facilities be extended to after-school hours and vacation periods?

Yes. This includes provisions for children during the summer vacations, and for non-school youth and adults after school hours during the school year.

16. Is attendance at school camps compulsory? No — not under the provisions of this Bill. They will be made available within limitations of the funds to those desiring them. At the present time, camping experiences are generally limited to: (a) children supported by the welfare groups, and (b) those children whose parents have sufficient funds to send them to private camps. Under present conditions, less than five per cent of all children receive desirable camping experiences. In no sense are these school camps intended to regiment American youth. On the contrary, they will extend educational opportunities to thousands of boys and girls heretofore denied this privilege. For years, churches, Y. M. C. A.'s, Y. W. C. A.'s, Boy Scouts, Girl Scouts, and other groups have struggled to maintain camps for special groups. This bill is an effort to carry on this good work for greater numbers of children than at present possible.

17. Does the Bill provide for minority races? Yes, in localities where separate schools are provided for separate groups only.

18. Does the Bill provide for a federal staff? Yes, for the organization and proper supervision of the national program.

19. Through what federal agency will the funds be disbursed? Through the U. S. Office of Education.

20. Through what state and local agency will the funds be administered? Through the official state education agencies and their local subdivisions.

21. What will determine the amount of funds that a state will receive? The total fund appropriated will be apportioned "annually to each state in an amount which bears the same ratio to the total amount made available as the ratio of the number of children five to twenty years of age, inclusive in the state, bears to the total number of children 5 to 20 years of age, inclusive, in all states."

22. Must states match the funds received? No, not during the first three years. After that the states must match part of the allotment if they are to receive the benefits.

Copies of this proposed bill may be secured by writing your Congressman at Washington, D. C.

Anyone interested in the welfare of youth and the conservation of the health of the nation should support this legislation. It is a nonpartisan bill and should have the support of all political groups. It is an important link in the defense program, but even as a peace time measure it should provide a much needed public service because individuals in all walks of life as well as in military circles need to build organic power, power to endure, power to resist fatigue, and power to resist infection. These powers come only through regular, progressive, and vigorous body exercises under careful supervision and in a healthful environment.

Some Biological Aspects of War

JACOB UHRICH

For centuries some men have cherished the hope that wars would disappear forever. Following the World War of 1914-18, more people than ever before hoped and believed war would soon be a thing of the past, as are dueling and witchcraft in some parts of the world. Again, however, much of the world is engaged in a mighty struggle which may be even more extensive and more devastating than the World War of 1914-18. There is, likewise, little reason to believe that when the current wars are ended, war will be abolished forever.

Is war, then inevitable? Is man's nature such that it will always lead to war between nations? Numerous authors have discussed these questions but have not agreed in their conclusions. Some insist that war is biologically inevitable, that man has an inherent tendency to fight. Others believe that the human species, like many other animals, has a strong tendency to fight but they do not believe that this naturally and inevitably leads to the type of group struggle such as modern war. Still others deny that the tendency to fight is inherent and insist that it is a product of man's training. The fact is, as some authors have pointed out, there is no available information to show to what extent the fighting "instinct" of man is hereditary and to what extent it is based on environment.

Competition in the struggle for existence has been emphasized repeatedly, while group cooperation, likewise very prevalent in nature and important in the struggle for existence, has until recently been largely overlooked. Examples of competition and cooperation abound in nature. Very often both competition and cooperation are at work together. Within a group of animals one may observe competition between individuals for limited food, shelter, mates, and other factors; while in the same group one may find the individuals cooperating in the care of the young and the protection of the entire group against some outside danger, often in the form of another species of animals.

Among mankind competition and cooperation are evident enough to require no further discussion. The large scale group competition in the form of war within the human species is unparalleled in nature. Individual competition within a species may be fierce, such as the fighting among the males for the possession of females. Some species, like some social insects, are remarkably well adapted to carry on group combat against other species. What animal, besides man, resorts to the practice of one large group fighting another large group within the same species?

Man has come a long way in his progress toward greater cooperation.

There are larger areas now in which people manage to get along with each other without resorting to wholesale killing than there have ever been before. The large nations of today are a great advancement over the small tribes repeatedly at war. Is it impossible for man to continue this progress, however slow it may be, until all people can manage to get along with each other without resorting to war? Some people think it is not. There is no biological evidence that such a goal is impossible.

Within the United States there is plenty of competition between different states. In early days this competition might have easily led to frequent wars between states. Indeed one such war was fought at a terrible loss of the best man-power of both sections. Whatever injustices may befall any section of the United States, can the loss be as great as were the losses, in terms of the qualities of the people of either side, in the Civil War?

Over-population, some say, inevitably leads to war. If the population increased without restriction, there would be more people than could be supported by the available food. This, it is argued, forces one group to war with another in the competition for the limited "room to live." The reasoning in this respect is rather curious in some countries. First the citizens are urged to produce more children for the sake of the nation. Next the cry arises, "We have too many people for our limited soil. We must have more room to live!"

With the widespread practice of birth control, there is no reason whatsoever to believe that over-population will always and inevitably lead to war. As a matter of fact, some nations, such as France, have been troubled with a decline of the population rather than an over-population. Various authors have predicted that before the end of this century the population of the United States will have reached its maximum. A similar arrest of the population growth can eventually occur in the rest of the world. Some biologists, furthermore, believe that if use were made of the available technical information, the world could support at least ten times the number of people now living, which is estimated to be somewhat over two billion.

The two biological reasons commonly given for the inevitability of war—the "instinct" to fight and over-population—really are not supported by facts. There appears to be no fundamental reason for believing that war must always be.

Are wars biologically beneficial? Is the quality of the human race improved as a result of wars? Again, there is no agreement among the authors. There are those who praise war as the loftiest activity of man. It eliminates the weak, so they argue, and permits the ablest individuals and nations to survive and to supplant the weaker. At the other extreme are those who are convinced that war kills the ablest men of the nation, leaving the weaklings and defectives to pass their hereditary weakness on to the next gen-

eration. Many authors express intermediate views.

The biological effects of war have been different in different wars and for different nations. Possibly those people holding the view that wars are biologically beneficial can cite wars that result in the increase in the size of a superior group of people and the decrease of the inferior. Some of the early tribal wars may have been of this type. This, however, is doubted by others. Likewise, those convinced of the biological ill-effects of wars can give rather impressive evidence to support their view.

The biological effects of war are varied and exceedingly complicated. To determine these effects and their importance is very difficult indeed, if not impossible because of the absence of adequate records and because of the indirect effects of war which may easily be overlooked. Many of the conclusions, therefore, as to the good or bad biological effects of war have not been supported by adequate, incontrovertible evidence, however sincere the authors may have been in trying to be unbiased.

In regard to the biological effects of war, one may discuss three periods: (1) the period of preparation, (2) the period of war, (3) and the period of reconstruction. In the period of preparation the method of recruiting and maintaining armies is of considerable biological interest. If an army is made up of volunteers, it may well consist of a relatively large number of shiftless men who were not well adjusted in their home communities. In that case they would probably not be above the average in desirable qualities except possibly in physical aspects. Their withdrawal from the reproducing part of the population would, then, not be an irreparable loss to the race. If volunteers join the army in times when their country appears to be in grave danger and an appeal is made to lofty idealism, the best men of the nation may answer the call to arms. Their removal from the stream of reproduction, especially over a period of several years, may represent a real loss to the race. This is thought to have happened in this country during the Revolutionary War and the Civil War.

Whether conscription is biologically sound depends on a number of factors. A biologically unsound conscription program would be one in which all able young men were in the army over a long period of time and in which a very rigid selection would exempt all those with defects. In such a program the able would be delayed, if not entirely prevented, in reproducing their kind, while many of the defectve would continue to have children. Some of the defects, no doubt, would be hereditary. The result of such a program would be more rapid increase of hereditary defectives than of the normal individuals. A biologically sound conscription program would be one in which the age limits would be as far apart as is feasible. This would permit the selection of a larger number of men without family responsibilities and men whose

children are able to take care of themselves. As a result, more men could be exempted who are in the midst of rearing their families. With this wider range of selection and greater number of exemptions, the rate of reproduction of the able part of the population would be less disturbed. It would be biologically desirable to extend the upper age limit of the present selective service draft in this country beyond thirty-five years, for there must be many thousands of men above thirty-five years of age who would be very satsfactory in a modern army for ten years or more and whose withdrawal from civilian life would not be a biological loss to the race.

The practice of prohibiting marriage among army and navy officers for several years after graduation from West Point and Annapolis and the further tendency of these men of having very few children later appear to be biologically undesirable. Undoubtedly these men are above the average population in intelligence, social qualities, and physical traits. Their failure to produce their share of the next generation is a biological loss to the race.

In modern warfare, with its bombing of civilian areas and its highly mechanized combat in the fighting lines, the selective death rate may well be different from that of earlier wars. Does the bombing of civilian areas kill and cripple the best and the poorest in equal proportions? Do the bombs fall mostly near military objectives—munitions plants, shipyards, railroads—where the poorer classes usually live, thus making this portion of the population suffer a relatively greater loss of life than the economically better groups? Does the bombing, cannon, tank, and machine gun warfare kill all types of army men—officers and privates—in equal proportion, or does it hit one group relatively harder than another? Are the thousands of men killed in airplanes a select group? Answers to these questions would be of biological interest. War is tragic enough at its best. If war does tend to kill off the superior individuals, as is maintained by many writers, leaving the weakest to propagate the race, then war is doubly tragic.

In some recent wars all men from some communities were sent to the front except the very old and the defectives. Many of them were killed at the front. It may be that death at the front was selective, that it struck a larger proportion of the less able soldiers—the poorest of the best men—but even they were better than those remaining at home. Under such circumstances war must have tended to destroy the "flower" of the nation's men.

With the greater degree of mechanization of the present war, it seems, a larger proportion of able men must be kept in the industries back of the fighting line to keep the war machine going. This means that more of the able men will remain with their families than in previous wars. It is impossible to tell at present whether or not modern war tends to kill off the best and the poorest in a population in the same proportion as in previous wars.

During the period of war the birth rate drops constantly. Here again, it would be of interest to know—but the information is not available—whether this drop affects the superior part of the population more than the inferior, or vice versa.

The period of war is often followed by years of economic and social difficulties. That these factors affect the birth rate of the different elements of the population is likely. During this period of depression does the poor part of the population reproduce itself at a relatively faster rate than the better portion, compared to their relative birth rates during normal times? Again the answer is not known.

The diseases both within the army and in the civilian population that strike so many people in all three periods discussed are also of biological interest. Some earlier writers have assumed that diseases and defects acquired as a result of war are passed down to future generations. That genetically sound people who acquire a defect during war should pass it to their posterity would be assuming the inheritance of acquired traits. Biologists have no positive proof that acquired traits become hereditary. With possible rare exceptions, a soldier is not more likely to produce defective children after he acquires a war defect than before he acquired the defect.

War is justified, some insist, because it prevents the overpopulation of the world. Wars have killed millions of people and have checked the birth rate during the time of war. This check, however, has been only temporary, a mere flicker in the steady increase of the world's population. What a wasteful method of preventing overpopulation it would be, even if effective! The material destroyed during war would more than support the people cut off by war. Obviously a variety of other factors will tend to keep the population within supportable limits.

Wars are said to be responsible for inventions of all kinds which later are used in the progress toward a greater food supply. With all the interest and activity in modern research, warfare between nations is not necessary to improve the technique of developing the resources of the earth for men.

War may plague mankind for many generations to come but there is no biological basis for the idea that war is inevitable. War cannot be justified on the ground that it is biologically beneficial. If man, instead of fighting himself, spent an equivalent amount of materials and energy toward controlling insects in some of the rich tropical lands, as has been suggested by others, he could vastly increase his food supply. When man eventually learns to cooperate in fighting other enemies instead of himself, he can occupy more of the earth and enjoy a more abundant life than ever before.

Essentials of an Effective School Safety Education Program

IRMA GENE NEVINS

Three factors need to be considered in organizing an effective safety education program, the pupil, the program of instruction, and the teacher. The first to be considered is the pupil who is to be taught how to meet his "life" problems in a safe way. His many problems need to be ascertained and used as the basis for organizing the instruction program, if it is to be effective. Those activities which are a part of his daily existence can be determined by studying the various situations which he meets in his physical environment as he attempts to adapt his interests, abilities, and needs to it. As the contractor studies the ground on which a house is to be constructed and then purchases the materials that can best be used, so the teacher should understand the child's background. His teaching materials are then based on the pupil's needs in regard to (1) living in his home, (2) meeting traffic situations, (3) performing in recreational and in work activities, and (4) meeting the problems of his school life.

The teacher should also be cognizant of (1) the child's growth and development, (2) his habits and skills, and (3) his attitudes toward and understanding of safe practices. The teacher must also recognize the physical and emotional readiness of the child to grasp a problem and its solutions. More specifically, the early elementary pupil needs instruction which conforms to his growth patterns. He has no conception of speed; the term is meaningless because he can make no comparison. Colors are not significant beyond being pretty, for he is not aware of the meaning of the danger red nor the safe green. Sounds do not mean near and far; they are pleasant or disagreeable. Size is a relative term; a mouse may be as big as an elephant or as small as a pin. His eyes and ears are not adapted to the high speed nor to the quickness of sounds in modern civilization.

As to the second factor, the specific needs of each age group should be determined and then an instructional program set up which will solve those problems. To be educated for safe living means that one knows what to do and then does it.

Safety is not a static term; it is dynamic, constantly moving, changing, and progressing; and one's conception of it changes in accordance with the change in life factors. Involving a way of life, it does not stress the morbid side of things nor previous accidents. In a large sense it teaches boys and girls to live. It is not for the privileged few, but for every boy and girl in every grade, irrespective of chronological, mental, or physical age.

The criterion for teaching safety is its preventing the individual from having the accident to which he is liable. Therefore it is necessary that the teacher obtain the facts on needs. This can be done by the following methods: (1) error analysis or a study of accidents that have occurred in the neighborhood and the community, (2) questionnaires on the interests and needs of the pupils, and (3) observation and discussion to find the activities in which the pupils participate.

The third factor in this program is the instructor. A good teacher is interested in (1) leading the pupil away from his unknown and unrealized actions to the place where he knows what to do in order to be safe, (2) providing him with the necessary information in order that he may think through his conduct, (3) aiding him to acquire skills so that he may perform safely, and (4) setting up situations in which the child forms the right kind of attitudes. For it is when the pupil is away from control that the effectiveness of the teaching is determined. This standard involves a two-fold responsibility for the instructor: first, an awareness of what the child really thinks (he often absorbs or forms an attitude entirely different from that intended), and secondly, the teacher's desire for safe actions strong enough to dominate his activities regardless of time, place, or participants for "what you do speaks so loudly I cannot hear what you say."

Using this information, the good teacher organizes her program and tries to lead the child from where he is to where he ought to be. In teaching, we have two knowns—the child and what we want him to know. But separating these two is the great unknown—how to get him from where he is to where we want him to be. In other words, the child's attitude toward safe living is the dominant factor.

"The program" is an all-inclusive term. It involves administration, instruction, and extracurricular activities, as well as the relation of the school to the community agencies and organizations.

The teacher's part of the safety program being very important, the rest of this paper will discuss those activities which center around the teacher and administrator.

The administrative part consists of the duties and obligations of the persons who look after the physical environment, the building, playground, heating plant, etc. This means the superintendent, the building, principal, the classroom teacher, the janitor—in fact, any person responsible for maintenance and order on the schoolgrounds and in the building. Some of the problems which need to be considered are the following: first, is the school a safe place for the child during his school hours? For example, is the railing of the stairway within his reach? Are the steps kept in repair—not worn smooth nor slick—and frequently cleaned? Are there places in the schoolyard or in the building which could cause an accident? Examine these conditions critically, and then do something about them. Mere

knowledge of a hazard is a dangerous thing, for to leave the condition as it is may cost the life of a boy or girl.

The administration should determine definite school routines, such as passing of classes, the order of going onto the playground or passing from the building, which stairway to use, precedence of certain grades, and other precautions governing activities. Secondly, definite plans should be worked out for fire drills. The pupils should be taken out of the building and away from it in a safe and orderly way. Visualize in your planning a fire drill with different parts of the building cut off, for one never knows the hour nor place where a fire may begin. Prepare the pupils for the unusual situation; keep them in order and watch carefully for each one during the drill.

Thirdly, take special precautions for the safety of participants and spectators when planning a program involving large groups. These programs are essential, for each boy and girl should be given an opportunity to sing, read, or dance before an audience; yet in the plans the teacher must take care.

Precautions to be considered are: (1) using electric candles or flashlights instead of wax candles; (2) refraining from putting paper decorations over light bulbs; (3) using care in the selection and use of stage properties such as weapons, appliances, and furniture; (4) using strong, safe stepladders when decorating; (5) examining wires and ropes on which curtains are hung; (6) making sure the fire escape is not blocked.

In courses such as physical education, the problems of safety form the basis on which all instruction is organized. For example, the instructor must (1) provide for safe environment, that is, a play space free from hazards and safe equipment; (2) plan a program of activities that will relate to the physical and emotional needs of the individuals; (3) provide leadership in playing the game, for adherence to the rules is a means of making the game safe.

This same thing is true for the teachers who has his pupils work with tools. Wise selection of tools and careful instruction in their use must always be considered.

The course in driver education and training is one that needs to be taught as a separate course.

The selection of materials for instructional purposes is another problem. At present quantities of material are being prepared in the form of books, magazines, pamphlets, and bulletins, and these are organized on the various grade levels. Also one may obtain free materials from insurance companies and manufacturers.

The problem is to select materials which are important in view of the experiences and adventures of the pupils. The following principles should be used in selecting materials for education for safety:

1. Consider the present needs of the child.

a) What do children of this age do?

b) What are the hazards involved in these activities?

c) How can the children be protected from these hazards?

d) Does the book in question provide an answer to these questions? If so, then it is a good one.

2. Select materials which are positive rather than negative. Safety is doing, acting, and performing, and is not negative.

3. Select materials which use the vocabulary of the age level for which the program is planned.

4. Secure materials which provide for progression, variety, and repetition.

5. Emphasize doing rather than memorizing and reciting. The important aspect of safety is to perform; set up situations in which the child will "learn by doing."

6. Obtain materials which the pupils understand and are emotionally mature enough to grasp. A child of the first grade is not mature enough to study motor vehicle accidents.

7. Select books which emphasize topics of interest to children of the age concerned. In this section of the country one is not particularly interested in skiing or surfboard riding.

The alert instructor seeks to find the interest and the needs of the pupil and to use them around a situation, thus having a "teachable moment." For example, when a fire has occurred in the neighborhood, or the children know about another fire, it is an excellent time to teach fire prevention. The children are interested in the cause of the fire, how the department is called, means of putting out the fire, the total cost, and the number and severity of the injuries. This unit could be organized so as to include all phases of the instructional program.

Emphasis at present is on the simple, direct terms which indicate a trend and point the way. The goal must be established, and ours in safety education is to prevent the child from having an accident to which he is susceptible. The order is large, and we must find means of breaking it down into life terms. These should be so organized as to give meaning to the child's experiences.

Our major objective is to prevent accidents. Ask yourself how you happened to get hurt. Was it a big thing, or was it the use of something small and simple in operation? The first question is, "What is the accident to which the child is susceptible?" The second one is, "How can we prevent this accident?" When this is done, safety education becomes a dynamic program, one that functions in the life of the child, in the community, and in the nation.

"It is to the school particularly that we must look for the development of the knowledge, the attitudes, the habits, and the skills necessary if we are to live with reasonable safety in the modern world."

Some Recent Advances in Botany

J. A. TRENT

The highway of scientific progress is marked with many milestones of botanical achievement. Although botany is one of the oldest of the natural sciences, recent developments in this field indicate that it is still a fertile field for research. The past two decades have brought advances probably of greater significance to scientific progress and human welfare than any other like period in the history of the science. During the past ten years the American Association for the Advancement of Science has awarded its annual prize of $1,000 for the most outstanding research in any field, on four occasions to workers in the field of botany. Of course, some of the more recent developments have been played up by the press and radio and have caught the fancy of the public. Occasionally, exaggerated claims have been made by irresponsible persons which have led to some disillusionment. However, this is unavoidable, since the press and radio are the chief means of informing the laymen of scientific progress, and most of the information given is "second-hand."

GROWTH HORMONES

Among the recent advances in botanical research probably none has attracted more attention or has offered greater possibilities of application than the study of the growth hormones. In the literature covering this rapidly developing field of research these substances are variously called *growth hormones, growth substances, growth regulators, phytohormones, Wuchsstoff, and auxins.* The word *hormone* was first introduced into animal physiology about 1902 by the English physiologist Bayliss. A hormone is currently defined as a substance produced in one part of an organism, transferred to another part, and there, in low concentration, influences physiological processes. Plant hormones likewise affect parts of the organism other than those in which they are produced. Like animal hormones, they exert their physiological effects while present in low concentration. It is chiefly upon this basis that the hormones are distinguished from those substances usually classed as foods. The broad definition of hormones is interpreted by some to include almost any growth substance, such as vitamins and other nutrients.

The auxins, the hormones which induce cell enlargement, constitute the best known group of the plant growth hormones. These have been demonstrated in many plant species but have been more extensively studied in the oat coleoptile. Auxins are apparently universally present in plants. They have also been found in animals but are not known to serve any essential role in the animal body. The auxins are synthetic products of plant metabolism, and

it would seem reasonable to conjecture that when found in the animal body they are of plant origin.

Many roles have been assigned to the auxins in the activities of higher plants. Some plant activities not hitherto well understood, now may be explained on a hormone basis. Cell elongation, bud initiation, production of lateral roots on cuttings, flower formation, production of seeds and setting of fruits, dormancy, healing of wounds, apical-dominance, phototropism, and geotropism are a few of the activities of the plant which have been attributed to the influences of auxins.

In addition to the foregoing, about 50 other compounds, all synthetic, have been found to promote root formation on stem, root, and leaf cuttings. Many cuttings that are otherwise difficult to root may now be readily propagated by a judicious selection of these substances. Of all these, indole-3-acetic acid, indole butyric acid and a-naphthalene acetic acid are in most common use. These substances not only hasten the production of roots but cause an increased number of roots as well. The usual procedure is to place the basal end of a cutting in a water solution of the substance, after which it is placed in sand, sawdust, peat, or other rooting medium until it is ready for transplanting. Treatment for 24 hours with a solution containing from 4-20 milligrams of the rooting substance per 100 cubic centimeters of water has been found effective with a great variety of plants. The American Association for the Advancement of Science in 1935 awarded its annual prize of $1,000 to two botanists of the Boyce Thompson Institute of Plant Research for their contributions in this field.

THE VITAMINS

One ordinarily thinks of the vitamins as accessory dietary factors necessary for animal nutrition. However, recent indications are that certain of the vitamins, notably A, B_1, B_2, and C play a role in plant development. Vitamin B_1 has received particular attention in this respect. White[1] observed potentially unlimited growth in a liquid medium consisting of inorganic salts, sugar, and yeast extracts, whereas growth without the addition of yeast extract was very limited. Later investigations in a number of laboratories have shown this unknown and important growth factor to be Vitamin B_1. A synthetic product, *Thiamin chloride,* has been prepared and appears to be identical in reaction with the vitamin extracted from the yeast plants. Vitamin B_1 is synthesized in the leaves of the plant and from there is translocated to other parts where it may be found in stems, roots, fruits, and particularly in seeds where it is either stored in the aleurone layer, as in wheat, barley, or rice, and removed in milling or polishing; or it may be present in the cotyledon, as in the pea or bean. The vitamin disappears during the germination of the seeds and is apparently used by

[1]White, Philip R., Potentially Unlimited Growth of Excised Tomato Root Tips in a Liquid Medium. Pl. Physiol. 9:985-600. 1934.

the seedling during the initial stages of growth. Experiments have shown that if the seedling is provided with adequate light, the young leaves begin production of the vitamin before the supply in the seed is exhausted. Numerous investigations have repeatedly shown that various fungi are unable to grow in artifical media in the absence of B_1.

The claims for Vitamin B_1 have doubtless been exaggerated by various sources, However, it is generally accepted by plant scientists that the vitamin exerts an influence upon the growth of roots in particular. This stimulating effect upon growth in the roots is apparently associated with increased cell division in the meristem of the root. It seemingly does not cause the initiation of root primordia which is influenced by auxins, but through more rapid cell division causes greater growth of roots after the primordia are formed. Various other claims have been made for Vitamin B_1. Aid to germination of seeds, rooting of cuttings, production of giant flowers, and general acceleration of plant growth are among such claims. Regarding these claims, no final statement can be made. In fact, contradictions are prevalent in the literature. It is known that all plants do not respond to treatment with Vitamin B^1. Among such plants are tomatoes, corn, wheat, and garden peas. It may be assumed that such plants have an adequate supply of the vitamin, and therefore do not respond to an added supply. Vitamin B^1 is effective in extremely low concentration. One part of the crystalline vitamin product, *Thiamine chloride*, to 100,000,000 parts of water is recommended for general use as a watering solution for plants. For the treatment of cuttings, the concentration should be greater. The literature pertaining to the role of vitamins in plant growth has been reviewed by Bonner[2] and more recently by Addinall.[3]

CHEMICAL PLANT CULTURE

The idea of growing plants without soil is not a new one. However, the growing of plants in media other than soil has recently caught the popular imagination. This is attested by the fact that several books and numerous articles have appeared in recent years dealing with some phase of chemical plant culture. Many of the books in particular are written especially for the amateur. Chemicals may be supplied in liquid solution (tank culture) or in sand. Tank culture has been commercialized under the name *hydroponics*. The press has played this up as a "new discovery" which would revolutionize the production of food and flowering plants. However, to the scientist, it is just another way to grow plants and has been so employed by them in their research for many years.

Research on chemical plant culture has extended the list of chemical elements formerly thought to be essential for plant growth. In addition to *oxygen, carbon, hydro-*

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[2]Bonner, James. The Role of Vitamins in Plant Development. Bot, Rev. 3:616-640. 1937.

[3]Addinall, C. R. The Story of Vitamin B_1. Revised Ed. Merck and Co. 1940.

gen, nitrogen, potassium, phosphorus, sulphur, magnesium, calcium, and *iron,* known to be essential for plant growth, it is now known that traces of *manganese, boron, zinc,* and *copper* are essential for some plants. In this connection it may be noted that the work of Hoagland et al, in the field of plant nutrition, was awarded the annual prize of $1,000 at the last meeting of the American Association for the Advancement of Science.

The mineral requirements vary with various species of plants and with varying environmental conditions. In general, however, under a given set of environmental conditions, most species of plants will grow under a wide range of variations of the mineral salts. The following is typical of the many culture solutions in general use:

Water	1000.00 cc.
$Ca(NO_3)_{4.4}H_2O$ (Calcium nitrate)	1.04 gm.
KH_2PO (Potassium phosphate)	0.31 gm.
$MgSO_4.7H_2O$ (Magnesium sulphate)	0.54 gm.
$(NH_4)_2SO_4$ (Ammonium sulphate	0.09 gm.

Very small amounts of *ferrous sulphate, boric acid, manganese sulphate,* and *copper sulphate* may be added. The latter are known as trace elements, and it may be noted that in most instances these are found in many natural waters in sufficient concentrations for plant requirements.

The chemicals necessary for making a mineral solution adequate for the amateur may be purchased at the grocery store or found about the home. Such a formula is:

Saltpeter (Potassium nitrate)	1 tsp.
Epsom salts (Magnesium sulphate)	1 tsp.
Baking soda (free of alum)	2 tsp.
Washing ammonia	1-4 tsp.

Dissolve in one gallon of water. This can be used either in tank or sand cultures.

COLCHICINE AND THE PRODUCTION OF POLYPLOIDS.

Colchicine is an alkaloidal substance, related to morphine and codiene and is obtainable from the autumn crocus, *Colchicum autumnale.* Its use as a means of doubling the chromosome number of plants is one of the most recent achievements in the field of botanical research.

The announcement by Blakeslee[4] in September 1937, of the discovery of colchicine as an agent for inducing polyploidy in plants aroused a great deal of interest among plant breeders in particular. Blakeslee, in a later report, said, "We now have an opportunity to make new species to order. The possibilities in the way of new forms of economic value seem very great. We now no longer have to wait ages for the chance hybridization between species and the later rare spontaneous doubling of their chromosomes in order to secure superior varieties."

Colchicine, when applied to dividing cells, prevents the separation of the chromosomes after metaphase by

[4]Blakeslee, A. F. Didoublement du Nombre de Chromosomes Chez les Plantes par Traitment Chemique. Compt. Rend. Acad. Sci. Paris. 205: 476-479. 1937.

inhibiting spindle formation. No daughter cell wall is formed, so the cell now contains twice the usual number of chromosomes, that is, it is tetraploid. This doubling has been reported to have continued in some cells until 16 times the usual number of chromosomes were present in the cells. Such doubling of chromosomes usually results in larger cells, and thus larger organs which they compose—stems, leaves, flowers, etc. This accounts for some "giant" varieties of certain ornamentals now available to the plant grower.

Another practical application of colchicine treatment is the production of vigorous fertile forms of plants from sterile species of hybrids. Species of plants which hitherto could not be crossed because of differences in chromosome numbers can now be crossed by treating with colchicine the species with the smaller number of chromosomes before attempting the cross. Dormant plant tissues do not respond to colchicine treatment, therefore, only active parts should be treated, such as germinating seeds, seedlings, growing stem or root tips, and buds. The plant, or some part of it, may be soaked in a water or weak alcoholic solution of the chemical, or the solution may be sprayed upon the plant. In some instances, glycerine, lanolin, or agar is used as a medium for applying the chemical to the plant. The range of effective concentrations is reported to be from 0.0006% to a 1% solution. Treatment duration ranges from merely wetting to 24 hours or more of soaking. Dermen[5] has recently given a critical review of the literature pertaining to the use of colchicine in inducing polyploidy in plants.

PHOTOPERIODISM

Photoperiodism refers to the duration of light daily required to bring the plant into reproductive activity. This now well-known phenomenon was first clearly recognized in 1920 by two American Botanists, Garner[6] and Allard, of the United States Department of Agriculture. Recent years have brought many advances in this field of research. Many practical applications of this phenomenon have been made by plant growers. It was pointed out by Garner and Allard that plants differ in their requirements of daily light periods or daily *photoperiods*. So plants have been grouped according to their daily light requirements into (1) short-day plants, those requiring less than 14 hours of light daily to bring them into flowering and fruiting; (2) long-day plants, those requiring day lengths in excess of 14 hours; and (3) indeterminate or day-neutral plants, those unaffected by day lengths, thus growing over a wide range of photoperiods. This phenomenon offers an explanation as to why some plants flower during spring, others during summer or autumn; still others may be observed to bloom almost any time of the year or not at all in certain latitudes. The application of this phenomenon

[5]Derman Haig. Colchicine Polyploidy and Technique. Bot. Rev. 6:599-635. 1940.

[6]Garner, W. W. and H. A. Allard. The Effect of Length of Day and other Factors of the Environment on Growth and Reproduction in Plants. Jour. Agr. Res. 18:553-606. 1920.

also accounts for the fact that Easter lilies are expected for Easter Sunday and chrysanthemums for a "mum" show, regardless of the date on which these occasions may come; poinsettias arrive for Christmas, provided the plants have been subjected to their required photoperiods and given other essentials.

Long-day plants may be produced out of season by increasing the photoperiod. It is of interest to note that this can be done with ordinary electric lights of the intensity of 1/5000th to 1/2000th of that of a bright summer day. To provide adequate supplementary illumination for chrysanthemums, 100-watt bulbs in reflectors, placed 18 inches above the plants is sufficient. One such light will provide adequate light for four square feet. For stocks five to ten foot candles are sufficient for the supplementary illumination. For the Chinese Aster one third of a foot candle is as effective as 100 foot candles. Even one-tenth of a foot candle or twice the intensity of bright moonlight is sufficient to influence the "Heart of France" asters.

Short-day plants may be made to flower out of season by covering them with a black cloth after they have been exposed to their required daily photoperiod. Short days are also favorable for the development of storage organs in the potato, onion, globe radish, Jerusalem artichoke, and others. Some recent experiments show a rather definite correlation between the photoperiod and the temperature. There is also accumulating evidence that the photoperiodic effect is influenced by hormones. Garner[7] has reviewed the recent literature pertaining to the phenomenon of photoperiodism.

VIRUS AND PLANT DISEASES

Among the common plant diseases recognized in recent times as being caused by viruses are: tobacco mosaic, curly top of sugar beet, peach yellows, dwarfing of onions, tomato streak, leaf roll of potatoes, aster yellows, virus gall of sugar cane, and witches broom of certain trees. Viruses have been detected in several hundred species of plants in different parts of the world. These agents are transferred from diseased to healthy plants by insects, as leafhoppers, aphids, flea beetles, and sometimes by tools used in cultivation. Some viruses are transmitted through the seed. The tobacco mosaic seems to be transmitted only by man himself in cultural practices. Insect transfer appears to be mechanical, the virus being transmitted only as long as the mouth parts are contaminated.

The nature of the virus is still problematical. Various theories have been postulated concerning their nature. A recent discovery was made by Stanley of the Rockefeller Institute for Medical Research, who isolated a crystalline protein substance which appears to possess the properties of the tobacco mosaic virus. The protein substance was repeatedly recrystallized without losing its ability to produce the disease. The substance was shown to in-

[7]Garner, W. W. Recent Work on Photoperiodism. Bot. Rev. 3:259-275. 1937.

crease in number when brought in contact with the tissues of the host plant, but could not be cultured in a non-living medium. For this remarkable research Stanley was awarded a $1,000 prize by the American Association for the Advancement of Science. These protein crystals consist of colloidal particles about 430 millimicrons in length and 12.3 millimicrons in width. Serological tests indicate that the virus is closely associated with protein. The methods of isolation as used by Stanley when applied to other plant viruses have yielded similar proteins. More recently, the protein has been shown to be a nucleoprotein.

VERNALIZATION

Vernalization is a relatively new technique in botanical research, although the concept is old. The term *vernalization* is the anglicized form of the Russian words *iarovization, jarovization,* and *yarovization,* each meaning to make springlike. In general the concept is that certain winter annuals, as winter wheat, and biennials can be induced to follow the spring annual habit by suitable treatment of their seeds before planting. The phenomenon of vernalization is based upon the principle of physiological preconditioning. The seeds to be treated are soaked in water for a few days and allowed to germinate until the radicle is about ready to break the seed coat. The seeds are then stored at a low temperature (0°-30°C) for nine to ten weeks before sowing, being stirred frequently and the water content kept constant. The method and duration of treatment vary with different plants. Here is a specific example. Lojkin[8] found that in the case of the Turkey Red variety of winter wheat exposing appropriately treated seed to a temperature of 1-30°C for nine to ten weeks before sowing it, materially shortened the time required to reach the heading stage. At 16-22°C, in a day length of 15-16 hours, plants from untreated seeds required about 150 days to reach the heading stage, whereas for treated seeds the total period from the time of beginning the cold treatment to heading was 110-120 days. The literature pertaining to vernalization has been reviewed by McKinney.[9]

[8]Lojkin, Mary. Moisture and Temperature Requirements for Yarovization of Winter Wheat. Contbr. Boyce Thompson Inst. 8:237-261. 1936.

[9]McKinney, H. H. Vernalization and the Growth-Phase Concept. Bot. Rev. 6:25-47. 1940.

Leisure For What?

HAZEL CAVE

The amount of leisure at the disposal of the average person has increased so rapidly within the present century that few are aware of its far-reaching significance. Indeed, few will acknowledge the possession of leisure time, for most people have filled it to the brim with activities which constantly drive them or leave them unsatisfied. While lecturing in this country, L. P. Jacks of England said, "The crime of the age is the waste of leisure time, for what we earn we put into our pockets, but what we spend in leisure time we put into our character."

A brief consideration of some aspects of the effect of industrial machinery on leisure will provide a common understanding of why utilization of leisure is one of today's major problems. The reduction of laboring time, which has grown like an avalanche through the years and is still growing, has had probably the most immediate effect. Neumeyer[1] gives figures from a chart prepared by William Green in which he represents the increase in the margin between working time and maintenance time as leisure. According to his estimate, about one-half of the 168 hours of the week are necessary for maintenance activities, i.e., eating, sleeping, etc. In 1840 over 70 hours was the average work week as compared with less than 50 hours in 1930. This means an increase in the leisure margin of about 14 hours to nearly 40 hours a week. Not only has there been a freeing of time but a freeing of body energy. Much work which previously demanded an expenditure of pure body energy is now done by powerful machines with a minimum of human effort. In this connection, there is another aspect to be considered. Whereas much of the labor in the previous era required large muscle activity, machine operation now uses chiefly the smaller muscle groups, thus introducing body tensions not previously experienced. Likewise, the fractionalized production of machine labor, whereby one man performs but one or few operations toward the final product, frequently eliminates the pride and satisfaction that the hand worker had in his completed task.

Another immediate effect of the increase in machine production has been an ever multiplying number of facilities for leisure time occupation. Some evidences of this are the large number of toys for children, games equipment of every sort, and carnival type entertainment for young and old. The quantity production with the attendant lowering of prices has placed such facilities within the reach of limited budgets. On the other hand, this has likewise tended to mechanize and commercialize much of the recrea-

[1]Neumeyer, Martin H. and Esther S., *Leisure and Recreation*. A. S. Barnes and Co., 1936. p. 20.

tional activity. Of course, the foregoing account gives but a superficial picture of the profound influence of machine production in all of its ramifications, but perhaps it serves to stimulate thinking along this line.

Other phases of leisure, many of which can be traced back to the industrial revolution, are shown in Neumeyer's *The New Leisure.*[2] Some of them are: modern conveniences which have freed the housewife from many irksome tasks; greatly improved means of transportation and communication which have given man large increments of free time; increasing length of vacations; earlier retirement provisions for business and industry; reduction in gainful employment of children; and unemployment, which has loomed large in the last decade. Although unemployment produces forced free time rather than leisure in the truest sense, its effects cannot be omitted here.

It becomes increasingly evident that leisure must be defined in order that there be a mutual understanding of its meaning. Lindeman explains it in a recent work thus:[3]

> . . . leisure is thought of as an antithesis of labor. The exact contrary is nearer the truth: namely, that leisure is the complement of labor. Those who wish to work but cannot find employment do not by reason of this fact enjoy leisure. Leisure is not idleness. Loafers and wasters and parasites are the possessors of unused time but not of leisure. Leisure is the privilege and the reward of those who do useful work, the freedom which they earn because they have fulfilled their necessary roles in society.

This is completely in line with the present realization that man's life is a whole, made up of many contributing parts, no one of which may be omitted without seriously disturbing the balance of the entire being.

The extreme importance of leisure's contribution to this balance is being recognized on every hand. Dr. George Cutten, President of Colgate University, says, "The proper use of leisure has created every civilization which has ever existed, the improper use has killed each one in turn." James E. Russell, Dean Emeritus of Teachers College, Columbia University, expresses his opinion thus,

> We are entering a new world—the world of the machine age, the beginnings of which are unfolding before us; that in the days to come there will be more at rest than at work, and more leisure than labor; and that failure to prepare for these conditions, as in the past, will bring disaster. For lethargy in mind and body is a fertile field for the seeds of discontent, disorder and disease. Thus education for leisure and the enrichment of adult life is no slight education activity; it is no peripheral problem; nor is it an incidental task. It is rather a fundamental problem affecting the welfare of the State, and its perpetuity; and as such should receive major consideration.

Perhaps one might question how this new leisure can be other than an influence for good. Cutten's book, *The Threat of Leisure,* suggests in its title that the author is acutely conscious of adverse influences operating to pervert leisure use. The

[2]Ibid., Chapter 2.

[3]Lindeman, Edward C., *Leisure A National Issue.* Association Press, 1939, p. 8

following factors are but few of the many which are related to this aspect of the problem.

It has long been a common observation, and has now been scientifically substantiated, that there is within the human being a drive for activity, using the term activity in its broadest sense. In the child this is evidenced by his curiosity concerning his environment and a desire to handle as much of it as allows handling, not stopping short even of a wish to touch the moon. In adult life this continues in an urge to perfect one's self in some profession, art, business, or industry. Immediately, of course, will come to mind the parasites of society who are content to advance on the result of others' efforts. But often this attitude is a perverted one, brought on by the organization of society itself and not an innate tendency. Such persons perhaps never had a legitimate channel of expression for their activity urge. A child who is without adequate play space in the home or outside may reach maturity without facilities for wholesome recreation. He may associate with those who prey upon society because of necessity for existence or because of accumulated resentments against the unequal distribution of society's benefits. When he finally reaches adulthood, he is thoroughly grounded in cynicism toward anything which smacks of social benefit to himself or to others.

Another aspect of unwise use of leisure time is presented by the universal participation in commercial recreation. The taboo label should perhaps not be placed on all commercial amusements, for they have possibilities for good or bad in proportion to the social ideals or the accuity of vision of those in charge of providing what is socially desirable. Commercial recreation may range from the most inspiring musical concert through facilities for various games in a wholesome atmosphere, down to the back room pool hall of the small town and the most tawdry burlesque in the city. Though sociological and psychological analysis of this influence will not be undertaken, excerpts from H. A. Overstreet's *A Guide to Civilized Leisure,* clearly presents one of its undesirable aspects. Overstreet relates that Maxim Gorky, after a day at Coney Island, remarked, "What a sad people you must be!" Commenting on Gorky's attitude, he continues:[4]

> "He was not deceived by the fanfare and frenzy .... He saw these people—weekday driven, subdued, suppressed, yoked to work that was mostly hateful, living in quarters more hateful still—breaking forth into a kind of delirium of release —Coney Island was not a joyous place, it echoed the laughter of sick souls."

The person who has found truly satisfying leisure time occupation is calm and relaxed, not tense, and not bored whenever he is not in the midst of a crowd and excitement.

Closely related to the commercial recreation activities, though not always one of them, is the spectator-type of leisure time recreation. Dr.

[4]Overstreet, H. A., *A Guide to Civilized Leisure* W. W. Norton and Co., 1936, pp. 17-18.

Jay B. Nash in his book, *Spectatoritis,* elaborates on the growing place of spectator recreation in American life. Here, as with commercial recreation, no blanket condemnation should be made, but the limitations of such occupations must be realized. Too often they involve a mere pouring in process, and there is within the individual no urge which acts as a catalytic agent for converting what is received into a vital part of everyday living. Science has proved that muscle atrophy results from disuse, and it is not unlikely to suppose that an exclusive program of passive reception of the results of others' efforts may evidence itself in both physical and mental stagnation, if not complete atrophy. What positive potentialities has increased leisure, if its negative results are delinquency, crime, and excessive indulgence in commercialized recreation and passive amusement?

People have been prone to consider the great increase in leisure as a goal in itself rather than as a means to potential enrichment of life. In *The New Leisure Challenges the School,* there is a quotation from an article in the Atlantic Monthly by Herbert Hoover when he was Secretary of Commerce. Hoover said, "Our stage of civilization is not going to depend upon what we do when we work so much as what we do in our time off. The moral and spiritual forces of our country do not lose ground in the hours we are busy on our jobs—their battle time is the time of leisure. We are organizing the production of leisure. We need better organization of its consumption."[6] What then are some of the potentialities which may be realized as a result of the added increments of leisure?

Many people think that "the grass on the other side of the fence is greener" and thus become blinded to the intriguing, fascinating things that surround them in their everyday living. Whatever activity one chooses for leisure time should be motivated by a sincere interest and not selected because "the Joneses do it" or because it is a fad or because someone advises it. Only when one chooses activities through his own volition, or when he is sympathetically guided to a choice can he realize the possibilities visioned by Joy Elmer Morgan, editor of the *Journal* of the National Education Association, when he questioned, "What new heights may the race not reach if one generation of teachers can guide one generation of children to meet the challenge of leisure with eager search for the higher values?"[7] The teacher who has not herself experienced the enrichment of joyous activity during leisure cannot guide children's free hours into worth-while channels. Leisure time activity should be both joyous and creative if it is to give the deepest satisfaction. Jacks makes this clear when he speaks of man as being "skill-hungry" for skill of

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[6]Leis, Eugene T., *The New Leisure Challenges the Schools.* The National Recreation Association, 1938, p. 30.

[7]Morgan, Joy Elmer, Leisure of Tomorrow, *Journal of the National Education Association,* January, 1930, p. 6.

both mind and body. In addition he says,[8]

> . . . no human being was ever made happy by having happiness poured into him from outside, or ever will be to the world's end. The happiness that man's nature demands is impossible until the creative part of him is awakened, until his skill-hunger is satisfied. Man's happiness for which he was created, comes from within himself . . ."

Who has not experienced the inner glow of satisfaction resulting from his own handiwork, whether it be a bit of block printing, some gadget for household convenience, or even a pan of golden brown biscuits? Neither is this satisfaction dependent upon expert performance, though unfortunately that is the goal too often demanded in our critical American society. In the report of the Department of Superintendence of the National Education Association for 1931 is this statement with regard to adult education, but equally applicable to our present consideration,[9]

> . . . there are more persons interested in art with no thought of becoming artists, in music with no thought of becoming public performers, in sports with no thought of becoming athletes, in religion, social service, public welfare, education, with no thought of becoming great leaders in these fields; not only more, so far as actual numbers are concerned, but more proportionally than ever before.

Another of leisure's contributions is time for meditation, self-evaluation, or adventuring with thought. Perhaps this is more remote than any activity yet mentioned, for few in the present day are willing, or even dare to indulge in such pastimes. Not always is the *self*, which one has built up, good company. Of all the realities of life which one finds hard to face, the reality of what he has let himself become is often the hardest, for it is the one for which he can, in honesty, find no alibi. But when life has been enriched by broad reading, frequent contact with the beauties of nature, good music, and consciousness of worthwhile contributions to his fellowmen, then self may make a rich companion.

In addition to those aspects of leisure which are beneficial chiefly to the individual, society as a whole is also enriched or impoverished in proportion to the character of the individuals of which it is composed. Joy is added to pleasure by sharing with others the delights one has experienced himself. In his book, *Co-operation—An American Way*, John Daniels gives the essence of recreation in a democracy when he says, "Cooperative recreation . . . aims to replace the motive of playing against the other fellow by that of playing with one's fellows."[10] Overstreet expressed much the same idea in the following words, "The significance of our free-time activities is that almost inevitably they place us in a sharing mood . . . we learn the fine art of companioning."[11] This leads one not only to sharing with his immediate as-

[8] Jacks, L. P. *Education Through Recreation.* Harper and Brothers, 1932, p. 35.

[9] pp. 186-187.

[10] Covici-Friede, 1938 p. 48.

[11] Overstreet, H. A., *A Guide to Civilized Leisure,* W. W. Norton and Company, 1936, p. 28.

sociates, but to a profound and sympathetic understanding of those in his community, in his state and nation, and even in other countries of the world.

If, then, most persons are willing to concede that leisure is opening up unlimited vistas for individual and national enrichment, what specifically needs to be done to make the most of the opportunity? It is at once evident that what one is to do with leisure time is worthy of most careful investigation and consideration. Anyone wishing an adequate presentation of the subject should read *Leisure—A National Issue*, a recent publication from the pen of Edward C. Lindeman. In contrasting the old type of leisure, which was conceived of as time in which one could do what he pleased, with the new leisure, he says, "To the person who has begun to recognize some of the implications of life in a scientific and technological world freedom means interdependence, collaboration, relatedness."[12]

The most immediate needs seem to be a great increase in every kind of facility for wholesome leisure time occupation, adequately trained leadership to point the way to worthy use of those facilities, and access to participation in those activities at such a low cost that they are within the range of everyone. Next in importance is the awakening of both teachers and students to the challenging possibilities of leisure. Closely allied with this will be sane promotional schemes for encouraging those not in contact with the educational system to utilize their leisure in a constructive fashion. From the firm foundation formed by these procedures, the United States should then be able to progress to bettering of housing conditions, adequate programs of socialized medicine, equalizing of vocational and educational opportunity, and ideally to bettering of human relationships of all sorts. On this subject Lindeman says, ". . . if people find group work methods useful as instruments for achieving their recreational needs they will also discover that the habits thus engendered may be transferable to vocational and civic life."[13]

[12]Lindeman, Edward C., *Leisure—A National Issue*, Ass. Press. 1939, p. 14.

[13]Ibid., p. 25

Adaptive Coloration, Protective Resemblance, and Mimicry

CLAUDE LEIST

A phenomenon of nature observed by almost everybody is the color and color patterns prevalent in the integument of animals. The color patterns often blend with the landscape and make their possessors inconspicuous to the human eye. Many naturalists believe animals so colored are equally inconspicuous to other animals and also that a prey possessed of such color patterns would be protected from its predator because the latter could not distinguish the former from the environment. Conversely a predator bearing color patterns would have an advantage over its prey, for the predator could stalk unobserved. To explain this prevalence of color and color patterns were formulated the theory of adaptive coloration and allied theories of protective resemblance and mimicry.

To the naturalist color and coloration are not synonymous terms. He distinguishes between the terms color and coloration. A color is a single hue. Coloration refers to the arrangement or pattern of hues. Any coloration of an animal which is thought to protect its owner from predators or other perils of environment is termed protective coloration. A coloration of an animal which matches the environment and conceals the animal from predators is obliterative coloration. If the coloration and contour of the animal are such that it appears to be some inanimate object (for example, the walking-stick insects and measuring-worm caterpillars resemble sticks or twigs when undisturbed, and certain butterflies appear like dead leaves when at rest) this is called protective resemblance.

It is thought that some animals get a measure of protection by resembling some animate objects other than their kind. Cases are cited in which an insect demonstrably palatable to birds or other insectivorous animals possesses the color and form of a more or less unrelated insect which is unpalatable to predators and thus the former insect by imitation acquires a measure of protection. This protective resemblance is called mimicry, the palatable insect being known as the mimic, the unpalatable one, the model. The entomologists recognize at least two kinds of mimicry. The example just mentioned is Batesian mimicry. The other kind, the Mullerian mimicry, is a case in which both mimic and model are inedible, and hence are equally free of predators.

Many insects and some amphibians and reptiles possess a coloration that is associated with a poisonous or other obnoxious characteristic of these animals. These so called warning colorations presumably

advertise to the predators to leave this or that particular prey alone or else suffer the consequence. The term warning coloration is also used in another sense. For example the white rump patches of the prong-horned antelope is said to be a warning adaptation. The animal flashes these patches as a warning signal to other antelopes when it senses danger. Opposed to protective coloration is the aggressive coloration, a coloration of a predatory animal which supposedly blends with the environment and thus conceals the predator from its prey.

Colorations like those mentioned above are thought by many biologists to be adaptive. They believe each coloration has had some particular function in the preservation of the race whose members were fortunate to have had a particular coloration.

That color may protect the animal in its environment against physical factors such as heat, cold, light, or a combination of such factors is often ignored by the supporters of the adaptive coloration theory. Only the physiologists and ecologists have touched upon this subject. However, color patterns viewed from this light would hardly explain the variety of patterns exhibited by animals. Solid colors of a single hue would afford more protection against physical factors. A well tanned skin protects from the ultra violet rays of the sunlight, and the dark coat of fur bearing animals absorbs more heat than white coats.

Although colors due to physical factors are not ignored, most cases of color and coloration focus upon predator and prey. One of the factors which an animal has to contend with is its predators, a factor which, with the exclusion of disease and climatic conditions is the chief agent in decimating its members. Any variation in an animal, whether anatomical or physical, which aids it in evading its predators, gives it a better chance to survive and to propagate its kind. If the favorable variation is inherited by the offspring, it also would have like advantage in evading predators. Members of each generation which inherit the characteristic variation would forge ahead of the less fortunate members in the struggle against predators. Nature sifts out the animal having the variation as fit and casts out members succumbing to predators as unfit. In the course of time the variation becomes an adaptive factor; its adoption means survival. Continued variation, if helpful in the struggles against predators, would be preserved by natural selection and new species would arise. In this manner, it is thought that coloration is preserved, whether it be warning, obliterative coloration, or mimicry. Right color combination means survival. This is Darwin's theory.

However, some cases of so-called protective coloration and resemblance can be explained by the direct action of food, light, temperature, humidity, or other physical and physiological factors playing

upon the animal without resorting directly to natural selection. Many larvae and adults of insects are green in color and thus are inconspicuous, to man at least, in their environment. They are green because the skin is transparent and transmits the green color of the chlorophyll of the leaves they have eaten. Coloration may be due to the deposition of metallic or organic waste materials in certain regions of the body. Poulton[1] showed that when certain lepidopterous larvae were exposed to various colored lights for a few days before pupation, the chrysalids were affected variously as to color. Many seasonal variations in color and size affecting insects may be due to temperature or humidity or both, warmth usually brightening, cold usually darkening the colors. Color and colorations, due to causes mentioned above, can be explained as incidental to physical and physiological causes apart from natural selection. The change in color of some birds and mammals seems to be caused by secretions of hormones coinciding with sexual cycles.

What is the source of color in animals and what is its evolution? Its source is more easily explained than its much debated evolution. Color in animals arises from several well known sources, some of which have already been mentioned. The colors derived from deposits of chemical substances in parts of the organism's body are classed as pigmental colors. Some colors are due to the structure of scales, or feathers, or laminae of cells which cause interference or reflection of light and as such are called structural colors. Combination colors are produced by the simultaneous action of pigmental and structural colors. The splendor of combinations of colors is manifested in butterflies, moths, and many birds. The presence of color in some areas, and its absence in others, give rise to coloration. When living things first appeared upon this earth, all the chemical and physical factors which composed the earth's crust were already present. To this environment the organism had to react. The various and intricate chemical reactions in the metabolic activities of the organism were alone sufficient to give it its hues while the structural arrangement of its cells would account for the structural colors. Even if reasons as to why pigments are deposited in animals are not known, it is certain that these pigments are often deposited through exposure of the animal to light and heat and cold. Thus it is reasonable to believe that the animal would possess a hue because of the metabolic and physical activities it undergoes through its continual effort to adjust itself to environment. The ability to form colors is innate and is a consequential result of active protoplasm. Also it is obvious that if colors are to persist this ability must be inherited. These questions arise. Is coloration adaptive? If so, how did it become adaptive? How is such adaptation preserved? These

[1]Poulton, E. B. 1890. *The Colours of Animals* New York. D. Appleton & Co.

questions are still in debate. At present none have been satisfactorily answered.

There are many colored insects which are extremely conspicuous amid their natural surroundings. The conspicuous colors are frequently associated with qualities that render their possessors unpalatable or obnoxious to birds or other predators, and are advantageous if, by insuring prompt recognition, they exempt the owners from attack. To prove that their offensiveness is not an assumption, several investigators have made many experiments and observations on the subject. Many of the experiments are open to criticism because captive insectivorous animals were used. Field observations are not open to this criticism and are considered for the most part reliable. From a mass of accumulated data there appear some conclusions of definite value. Such investigators as Fin, Poulton, Marshall, and Judd, all agree that although there is no insect which is entirely free from predators, yet on the whole the predators show definite likes and dislikes for certain foods and the more highly colored and conspicious forms are most often avoided.

What has been said of warning coloration is also true of mimicry. Many highly colored butterflies are relatively free from predators. These butterflies are mimicked by members of other Lepidopteran families. It may be recalled that the milkweed butterfly, *Anosia plexippus,* is the model of the viceroy butterfly, *Basilarchia archippus.* The mimic butterflies are thought to be palatable and more delicate in structure than the models, but they gain their freedom from attack by deception, deceiving their predators by mimicking the models. Through the aid of natural selection the mimics become more and more like the model.

When first formulated, the theory of adaptive coloration and its allied theories were accepted without question by almost every naturalist. It could seemingly be explained beautifully by natural selection. Some naturalists of the latter part of the nineteenth century searched for examples of adaptive coloration and gave absurd examples. Weismann extinguished the ardor of those who advocated the inheritance of acquired characteristics, and DeVries, inserting his mutation theory into the stream of current thought, checkmated the idea that species were built up by the accumulation of slight variations. The adaptive coloration theory was attacked.

Several objections were raised to the theory, the most obvious of which are: (1) Many species of animals which apparently have most need for protective coloration or kindred protective devices do not have them and yet they survive. (2) Some zealous suporters of the theories have often been guilty of teleological reasoning. (3) Numerous so-called protective devices can be explained more reasonably as incidental to the animals' food habits or body physiological reactions and as such have no protective or survival

value. (4) It is difficult to test by experimental methods the theory that coloration and mimicry afford protection to the possessor. (5) Mimicry and other color patterns are caused by mutations, which have played the initial part in the inheritance of color patterns. The geneticists believe natural selection may preserve the color pattern mutation if it is advantageous to the possessor, but if neutral there is no reason for its elimination and as such it would be carried along in the stream of descent.

A few of the many examples illustrative of the objections to the theories just cited above are timely here. The polar bear is said to have aggressive coloration. As it is white, it blends perfectly with the ice flows on which it lives. This aggressive coloration enables it to slip upon an unsuspecting seal. Why hasn't the seal obliterative coloration? Doesn't it need protection from the predatory polar bear?

As has already been stated, many insects are green in color as the green chlorophyll of leaves they have eaten shows through their transparent skins. This green color surely blends with the color of the plants on which the larvae live; yet birds readily find these insects and feed upon enormous numbers of them. The color is not adaptive or inherited but is caused by circumstances incidental to the food habits of the insect.

The seasonal changes in colors from white in winter to various shades of brown or gray in summer exhibited by the ptarmigan and some hares is certainly a concealing factor, to the eyes of man at least, in the environment for these animals whether it is called an adaptation in the direction of protective coloration or not. Elton[2], an ecologist, is willing to concede that coloration may be adaptive in some birds and insects but never in dimorphic phases among mammals, i.e among those mammals exhibiting two color phases, either in summer or winter. He says of the arctic fox (*Vulpes lagopus*), "In this form it is hard to explain survival value for the coloration. This fox occurs in two color phases one of which is brown in summer and blue (often black) in winter. Blue and white phases occur equally in both sexes, the phase species inter-breed freely and are found in various proportions of the population. If the whiteness in winter is an adaptation can the other phase be also? If the black color is not adaptive how did it evolve? In many parts of the arctic the fox can have no possible use for its color since it subsists upon carrion left by bears out on the frozen ice, or if on land, it depends almost entirely upon caches of animals collected and stored up in the autumn." Elton thinks that the above case of dimorphism, as well as many other cases of dimorphic forms, must have arisen by the spread of color varieties in the population, but apparently were not encouraged by natural or sexual selection.

It is difficult to confine animals

[2]Elton, Charles 1927 *Animal Ecology.* The Macmillian Company. New York.

and get them to feed normally as they do in the wild state. Food which an animal may eat while in captivity may be ignored in the free state and visa versa. For this reason, since it is difficult to simulate the same conditions of nature in the laboratory, most food habits of animals which tend to support the theory of mimicry and warning coloration have been observed in the field. It is true that many predators discriminate between types of prey, preferring some, avoiding others. However, McAtee,[3] declares that predators are by no means as discriminatory of their prey as many naturalists would have us believe. He has collected an enormous amount of data upon the food habits of birds and comes to the following conclusions. Availability is the greatest factor in the choice of food by birds. Within the limits imposed by body modifications, special habitats, and relative size of predator and prey, birds are prone to feed upon what is abundant and easily obtained. Within an animal group of a few species, few birds prey upon it, but an animal group composed of a large number of species becomes an important item of bird food. Availability is the chief factor in the choice of food, not the degree of palatability. The total mortality of animals is known normally to be in strict proportion to their numbers.

In spite of the searching criticism hurled at the idea that coloration is adaptive and protective, there are still worthy men who uphold it. Space will not permit giving their evidence in its support. One thing is sure, there is coloration in animals. Whether it is advantageous, disadvantageous, or neutral in the life of the animal is still a debatable question. More critical observation and experimentation must be made before a definite conclusion can be reached. Fortunately even if the *why* of animal coloration is not known, their marvelous color patterns can be studied and enjoyed.

[3]McAttee, W. L. 1932, Smithsonian Miscellanious Collections. Vol. 85 part 7.

The History and Function of State Parks in the United States

PRENTICE GUDGEN

If one can judge by the results in many states, the popular appetite for parks grows by that on which it feeds. First, city parks were developed in the middle of the last century. Then certain men of vision saw that there was within our borders scenery so rare and so superb that it must not be destroyed and that it existed on too great a scale to be owned and controlled by any power less than the United States. Thus came national parks. Now each of the forty-eight states has discovered that the national parks are not near enough home and that within state borders there is natural scenery so situated or so characteristic or of such historic interest that it ought not to be left to the vicissitudes of private ownership but must be acquired for the use of the people at large, who alone can possess and protect it for the common good.

Two or three generations ago the people who saw and felt these things were few and far between, but many have been stimulated by these few enthusiasts. The judgment of these early visionaries will be more and more justified as time goes on, for the increase of population decreases the areas available for popular recreation, camping, and fishing. Viewing the state park situation retrospectively and as it exists today, it is nothing short of startling to observe the phenomenal advancement which has been made within the span of the past few years.

During the first world war the success of army recreational activities in maintaining morale awakened the cities to their recreational needs with the result that city parks and open spaces were fast turned into playgrounds. There is a serious need for real parks which the cities can no longer provide.

It is interesting to know that Bushnell Park at Hartford, Connecticut, was the first public park in the history of the world to be bought for that purpose (1840) with the people's money by their own vote. It took Horace Bushnell five years to persuade his fellow citizens to take such an unprecedented step.

As stated before, the state park movement is not of recent origin. Its commencement dates back to 1865 when Congress granted to California the Yosemite Valley and the Mariposa Grove of Big Trees for state park purposes. In 1870, the General Court of Massachusetts created a Board of Park Commissioners with power to locate in or near the city of Boston one or more public parks for the recreation, health, and benefit of the people. For that matter, the Massachusetts Bay Colony, as far back as 1641, had de-

creed by ordinance that great ponds, bodies of water over ten acres in extent, be forever open to the public for fishing and fowling.

New York's first state park was authorized by laws of 1883, which provided for the appointment of the Commissioners of the State Reservation at Niagara. The park was opened in 1885. The year 1885 also dates the beginning of the present State Conservation Department, which is now administering parks and recreational areas in every part of the state. Acts of 1885 authorized the state of Minnesota to condemn land for park purposes. In 1889 Minnesota established the Birch Coulee Park, a battleground of the Sioux War. Acts of 1891 provided for the establishment of Itasca State Park "for perpetual use as a park."

Connecticut, in 1887, established the Israel Putnam Memorial Camp Ground. Pennsylvania, 1893, provided for the perpetuation and preservation of the site on which the Continental Army under General George Washington was encamped in quarters at Valley Forge. Mackinac Island and Fort Michilimackinac were transferred to the state of Michigan by the federal government for park purposes. Mackinac Island had previously been established as national park in 1885. Illinois, in 1903, provided for the acquisition of Old Fort Massac as a state park, to be forever kept "free of access to the public." In 1906, William Randolph Hearst became interested in the site of Old Salem in Illinois. This had been the former home of Lincoln and Ann Rutledge. He purchased sixty acres of the site and later turned it over to the state of Illinois to be developed as a state memorial park.

Succeeding years witnessed a steady growth in the movement. Prior to 1933 there were 792 state parks and related areas (monuments, waysides, etc.) with a total of 3,259,996 acres. With the advent of the Emergency Conservation Work Program and the ensuing impetus given to conservation generally, and parks in particular, the movement has progressed at a rapid pace. Born of an emergency and for the purpose of relieving the acute conditions of widespread distress and unemployment then existing, the exigency found a number of states unprepared to receive the full benefit of the projected park and recreational area development program.

Since 1933, thirty-seven states have acquired a total of 350 new park areas totaling approximately 600,000 acres. Eight states have acquired their first park areas as a result of the stimuli provided by the Emergency Conservation Work program. Six hundred and thirty-nine C. C. C. camps have worked in 586 state, county, and metropolitan parks since the start of the program, the majority being engaged in developing state-owned areas. In supervising the work, the National Park Service has cooperated with 47 states, 26 counties, and 69 cities. So effective has been the work of the C. C. C. in demonstrating how present needs for public recreation can be met through state park development that, under an Act of Con-

gress approved by President Roosevelt on June 23, 1936, a nation-wide survey is now being made by the National Park Service to inventory and appraise existing recreational areas and facilities throughout the nation. This survey will lead to the development of a national recreation plan relating to park and recreational areas, large and small, in every corner of the country.

Obviously, the substantial expansion of areas and facilities has imposed added responsibilities upon the states to provide proper administration, efficient operation, and adequate maintenance. These responsibilities can in no sense or to any degree be assumed or financed by the federal government. While Congress, by act of June 28, 1937, has made possible the continued cooperation of the federal government with the states in the development of their parks, it is a condition of the Act that no project shall be undertaken unless adequate provisions are made by the cooperating agencies for the maintenance, operation, and utilization of such projects after completion.

At the outset of the Emergency Conservation Work program, the lack of legislation in a substantial number of states to provide adequately for the development, maintenance and operation of parks and their facilities, was no less striking than the absence of the areas themselves. In some states limited recreational facilities were being provided in forestry, fish, and game preserves; also incidental to historical sites or areas. Consequently, the authorities were put to the task of keeping abreast of recreation under laws intended and designed primarily, if not wholly, for the conservation of natural resources, which were enacted during a period when the conservation of the human resources. by means of areas and facilities for recreation or relaxation, was given little or no consideration. At the best, provisions for parks and recreation were wholly subordinated to other objectives.

That this situation quickly manifested itself is reflected in the legislation which has been enacted during the period of the Emergency Conservation Work program. With but few exceptions, all states have strengthened their park laws since 1933. Amending or supplementary legislation has been enacted in 24 states. Conservation Departments or Commissions wherein are centered all state park and recreational matters have been created by Georgia, (1937); Iowa, (1935); Kentucky, (1936); Oklahoma (1937); Rhode Island (1935); Tennessee (1937); Virginia (1935); and West Virginia (1933). State Park Boards or Commissions have been created by Arkansas (1937), this commission superseding the commission created in 1927; Colorado (1937); Delaware (1937); Missouri (1937); Nevada (1935); New Hampshire (1935), with a change in name from Forestry Commission to Forestry and Recreation Commission); New Mexico (1935); North Dakota (1935); South Dakota and Wyoming (1937). During 1937 the states of New York and New Jersey made

provision by legislative enactment for creating by interstate compact the Palisades Interstate Park Commission as a joint corporate municipal instrumentality. This is the first compact of this character to be negotiated, thus making further park history. Indications are that other compacts involving parks, parkways, or recreational areas having interstate characteristics will be consummated in the early future. The New York-New Jersey compact has come recently before Congress and met with the approval of that body.

It should be remembered that national and state parks do not serve the ends of recreation in its many forms alone; they are preserves of native *flora* and *fauna* and are likely to be the only ones in the future; they are also likely to be the only places for studying meteorology and insect and bacterial life with their influence on growth, soil, and climate under natural conditions, all these being subjects of great importance.

The functions, then, of state parks as they serve today and will continue to serve in the future are:

(1) To preserve natural scenery for aesthetic and economic purposes.
(2) To provide places for popular recreation (camping, fishing, swimming, etc.)
(3) To preserve places of historic and literary interest, and
(4) To set aside reservations for wild life of various kinds.

It so happens that much of the land especially valuable for its scenic beauty is of little or no use for agriculture, as for example, the strip-pit land of southeastern Kansas. Any land can be turned into a park and restored to natural conditions. Examples of more or less denuded land made into state parks are the Palisades Park in New York and New Jersey; the Bronx River reservation in New York was entirely despoiled . No state has been more efficient in denuding and destroying her natural scenery than Pennsylvania. She now boasts over a million acres in state parks and parkways. All these sites were worth while as parks because of their proximity to great cities. Their scenery, except the Palisades, while often very attractive, is not especially remarkable. In fact, *proximity to a great city is sometimes a most important reason for a state park.*

As population increases and the land is absorbed, it will become more and more necessary to have large parks in greater number, distributed so that they may be accessible to all within the state. To future generations it will surely be of the greatest interest to be able to wander among the New England Hills or over the Illinois praries or through the Pennsylvania pinewoods, knowing that the scenes are much the same as they were when Columbus sailed from Genoa. These parks will reflect America not only in her rare moments, but in her everyday garb. This expense is easy now but will become more and more difficult as time goes on. The chief reason for the intensive park system in the state of Iowa is the great value of land. As

nearly all the land is tillable, there seemed to be a danger that some day no land would be left for the public to enjoy. Caparn states that only five percent of Iowa is not under cultivation.

Colonel H. L. Kellogg, Illinois State Planning Engineer, says, "Increased tax revenue, due to increased property values, eventually will more than amortize the cost of acquiring the land and developing parks and parkways. In many instances blighted areas have been rehabilitated by the establishment of adequate parks, and have become municipal assets rather than liabilities." The Chicago Regional Planning Association recommends that ten acres of park be provided for each 1,000 persons. Of these ten acres, it is suggested that three acres be of playground type.

Shorter working hours, with consequently increased leisure, place a burden upon the state to provide for healthful use of this leisure or to accept the destructive influence of uncontrolled idleness. An extensive park system providing forest preserves as well as playgrounds has a definite recreational and educational value, proportionate to its accessibility. Parks are in no sense an innovation or an experiment. If properly administered, developed, and maintained, they serve a dual purpose: the conservation of the natural and human resources, and the promotion of general welfare. The public, by its resort to the parks in ever increasing numbers for recreation and relaxation, perhaps unconsciously but no less definitely, accepts them as a state governmental function.

CAMPUS ACTIVITIES

The January issue of the *Educational Forum*, Kappa Delta Pi publication, contains an article by Dr. Paul Murphy, professor of psychology, entitled "Democracy in Higher Education," in which he makes a plea for the adoption of a more humane and considerate attitude toward the so-called inferior college student.

Miss Elsie Leitch Bowman, head of the art department, and Mrs. Daphne Cross, assistant professor of elementary education, spent the Christmas vacation in Mexico. They visited Mexico City, Taxco, Toluca, and other interesting points in Mexico.

The Industrial Educational Club held the first of a series of monthly dinner conferences at the College Cafeteria, Thursday, Feb. 10. Teachers from the surrounding territory were invited to attend and participate in an informal discussion of the problems of the industrial-arts teacher.

Dr. Jane Carroll, professor of elementary education, spoke at the Oklahoma State Teachers' Association meeting in Tulsa February 6 and 7. On Thursday she spoke to the Division of Supervisors and Directors of Teacher Training on the subject, "Present Day Trends in Teacher Education." On Friday she addressed the Department of Speech Teachers on the subject, "Children and Poetry." This was the mid-year meeting of Oklahoma educators.

Lula McPherson, director of the Placement Bureau, attended the national convention of the American Economic Society and Southern Economic Society at New Orleans during the Christmas vacation.

Dr. Elizabeth Cochran, Miss Pearl Garrison, Miss Etelka Holt, and Miss Lillian Nelson, all members of the college faculty, spent their Christmas vacation in the South, chiefly at New Orleans. Dr. Cochran and Miss Garrison attended the Sugar Bowl game between Boston College and Tennessee.

Professor J. C. Straley attended a three-day meeting of the American Sociological Society in Chicago during the holidays.

John A. Backus, educational director for the American Type Founders Sales Corporation of Elizabeth, New Jersey, spoke at a dinner meeting in the College Cafeteria on January 13 sponsored by the Graphic Arts Club in the observance of National Printing

Education week. Ninety-one editors, printers, printing teachers, and superintendents from the four-state area were present.

Howard Siple, who graduated from the College last spring with an M. S. in psychology, has joined the staff of the department as an instructor for the second semester and summer session. He spent the first semester working on his Ph. D. degree in psychology at Northwestern University and will return there next fall to resume his work.

All members of the geography faculty attended the joint meeting of the National Council of Geography Teachers and the Association of American Geographers which was held in Baton Rouge, Louisiana, Dec. 27-31, 1940. The meeting was attended by geographers from all parts of the United States who especially enjoyed a southern city at that time of year. Interesting talks were given by those who knew the region well. The need was stressed for conservation of national resources. Following the meetings in Baton Rouge, two extended field trips were conducted to points of interest in southern Louisiana terminating in New Orleans.

Sigma Phi Mu, local honorary psychology fraternity established on the campus in 1928, was installed as a chapter of Psi Chi, national honorary society in psychology, on February 13. The College enjoys the distinction of being the first teachers' college to be granted the privilege of membership, chapters having been confined heretofore to liberal arts colleges and universities. Thirteen active members and two associate members were initiated at that time. Dr. Stanford Ericksen, professor of psychology at the University of Arkansas, was the installing officer.

The College was represented at the thirty-fourth annual convention of the American Vocational Association held in San Francisco December 16 to 18 by three staff members of the Industrial Education department, Dr. W. T. Bawden, Dr. O. A. Hankammer, and Professor R. L. Schwanzle. Dr. Hankammer, who went to the convention as a delegate of the Kansas Industrial Arts Association served as chairman of one of the sessions on Monday, Dec. 16 which discussed the topic of "The Industrial-Arts Teacher on Today's Frontier." Dr. Bawden spoke at this session on "Preparation for Teaching," and at a morning session on the same day on "A Living-and-Learning Philosophy." Enroute to the convention Dr. Bawden filled speaking engagements at the Southwestern State College of Diversified Occupations at Weatherford, Oklahoma, and the State Teachers College at Flagstaff, Arizona.

FIELD NOTES

Dr. and Mrs. Robertson Strawn have gone to Kearney, Nebraska, where Dr. Strawn has accepted a position as chairman of the fine arts department in the Nebraska State Teachers College. Dr. Strawn received his A. B. degree from the College in 1931 and his M. A. degree from the University of Kansas in 1932. During the past year he was in the University of Michigan at Ann Arbor, completing work on his Ph. D. degree. While at the College Dr. Strawn was a member of the Kappa Delta Kappa fraternity and editor of the *Kanza* in 1931.

Dr. Leland J. Gier, B. S. 1928 and M. S. 1931, took over his new duties as head of the department of biology at William Jewell College, Liberty, Missouri, at the beginning of the second semester. Prior to this he had been teaching biology at Campbell College, Bues Creek, North Carolina. He received his Ph. D. degree at Duke University in June 1940.

Dr. W. H. Williams, who graduated from the College in 1932 with a major in psychology, has recently announced his association with Dr. S. A. Grantham of Joplin as a specialist in the diseases of children. Dr. Williams received his M. D. degree from the School of Medicine at the University of Minnesota in 1939. He is a brother of Miss Velda Williams, first grade supervisor in the Horace Mann Training School.

Harold M. Cotner, Independence, who completed the work for the B. S. degree in Industrial and Vocational Education the first semester, accepted a position in the Lawrence, Kansas, Junior High School to teach printing and woodwork.

Ermal K. Whitesitt, B.S. 1932, resigned his position as printing instructor in the Chanute Trade School to go to East High School, Wichita. Ray A. Boyer, B.S. 1938, who taught in the Royster Junior High School at Chanute, was transferred to the Trade School and Leon Binkley, B.S. 1936, of Osawatomie, accepted that position.

Miss Ruth Fleischaker, a graduate of the College, held the position of demonstration teacher in the Horace Mann Training School Teachers College, Columbia University, during the summer session of 1940. Miss Fleischaker teaches eye-saving classes in the Joplin City Schools.

Miss Ann Frogue, B.S. 1938, who has been attending the University of Missouri for the past three se-

mesters, has recently been granted a graduate fellowship in the department of psychology. Miss Frogue is the first woman student to receive a fellowship in psychology at Missouri University. She is also vice-president of the University of Missouri chapter of Psi Chi, national honorary fraternity in psychology.

Garrett Morrison, who graduated from the College in 1937 with a major in psychology, has been granted a research assistantship for the second semester at Cornell University, where he will work with Dr. G. L. Kreezer. He expects to complete the work for a Ph. D. degree in psychology at Duke University next summer.

Jack Burnett, former assistant in the Biology Department who received his M. A. degree in 1936, recently received honor by being made treasurer of the National Association of Medical Students at the fifth annual convention held in Boston Dec. 27 to 29. He is also treasurer of the Johns Hopkins University chapter of the Association. Mr. Burnett entered Washington University, department of bacteriology, in the fall of 1936 and spent four years there, completing work for his doctor's degree. At the present time he is a student of medicine at Johns Hopkins University.

Robert Wilkins, who received the B. S. degree in Industrial and Vocational Education in 1940, has recently accepted a position as teacher of printing in the high school of Jacksonville, Florida.

L. C. Bork, M. S. 1931, former principal of the high school at Parker, Kansas, has recently accepted the position as teacher of ground work in aviation and mathematics in the high school and junior college at Marshalltown, Iowa.

COMMENTS ON BOOKS

Mental Health Through Education

W. Carson Ryan

The Commonwealth Fund of New York, 1938

During 1935-36, at the behest of the Commonwealth Fund of New York, Mr. Ryan visited many schools and clinics throughout the United States with a view to evaluating their application of mental hygiene principles. This book summarizes his findings.

According to the author, we are not doing as well as we might in applying mental hygiene principles in our schools. While ignorance of such principles still exists in many quarters, sheer inertia on the part of educators stands in the way of progress in too many cases.

Educators are agreed that certain types of teacher personalities should be eliminated from the classroom for the good of the child, but what attempts are being made to weed out such personalities? Some, but not enough. We give lip-service to the idea of making allowances for individual differences among children, but how many of us practice what we preach? Most teachers would mark the statement, "Behavior is caused," true on an examination, but how many of them realize the implications of that fact in dealing with classroom problems? The unhygenic effect of certain grading practices on children's behavior is generally acknowledged, but such practices still flourish in many schools.

There is probably some justification, also, for his contention that part of the blame for these conditions is to be laid at the door of those institutions responsible for training teachers. Certainly it would appear that when provision is made for only one or two lectures on mental hygiene during a student's entire college course, as in some of the institutions visited, the student could hardly be expected to gain a deep insight into mental hygiene.

The tone of the book is not wholly critical. Many schools visited are fully cognizant of their responsibility for fostering the mental health of the child and are doing a superior job in this respect. This is indication that there is a basic fund of knowledge in this field that has proved itself in practice. The book ends with a chapter, entitled "Next Step," which is an effective answer to the criticism that mental hygiene has no definite, positive program for improving education.

Paul Murphy

Contributors to This Number

Garfield W. Weede (D. D. S., University of Pennsylvania) is professor and director of health and physical education for men, having been appointed to that position in 1919. For three years he was director of athletics and coach, Washburn College, Topeka, and held a similar position at Sterling College for eight years. He also served one year as director of athletics at Camp Funston during the first World War.

Jacob Uhrich (Ph. D., University of Chicago), assistant professor of biological sciences, came to the College in 1937. He completed the requirements for the M. A. degree at the University of Nebraska, where he served as assistant in the department of biology for two years. He also held a graduate fellowship in biology at the University of Chicago for two years.

Irma Gene Nevins (M. A., Columbia University), professor and head of department of health and physical education for women, was appointed associate professor in 1928, and became head of the department in 1937. She served one year as physical director in the city schools of Kinsley, Kansas, and four years as physical director in the Junior High School, Hutchinson. During the school year, 1938-39, she held a teaching fellowship at the New York City Center for Safety Education, and is a member of the Committee on Teacher Education for Safety of the National Safety Council. In addition to graduate work in two summer sessions at the University of Colorado, she has completed three years of graduate study at Columbia University. The summer of 1936 was spent in travel and study in Europe.

J. A. Trent (Ph. D., Ohio State University), associate professor of biological sciences, came to the College in 1929. He completed the requirements for the M. A. degree at the University of Illinois, and has had seven years' experience as a teacher in public elementary and high schools in Tennessee and West Virginia. He also taught biology in Carson and Newman College and in Broaddus College.

Hazel Cave (M. S., University of Wisconsin), assistant professor of health and physical education, came to the College as instructor in 1925, and was promoted to her present position in 1930. She completed one summer session of graduate study at the University of Colorado, and taught in the physical education department one year at Iowa State Teachers College, Cedar Falls.

The school year, 1939-40, was spent in graduate study at New York University.

Prentice E. Gudgen (M. A., University of Iowa) has been instructor in physical education at Kansas State Teachers College since September, 1938. In addition to graduate study at the University of Iowa, he enrolled for three summers in the Northwestern Coaching School. From 1928 to 1931 he was principal of the high school and coach of athletics, Commerce, Oklahoma, and for seven years he was director of physical education and coach of athletics in the junior and senior high schools of Pittsburg, Kansas.

Claude Leist (M. A., University of Illinois) has been associate professor of biological sciences at the College since 1928, having been appointed assistant professor in 1926. He has completed two years of advanced graduate study at the University of Kansas. His teaching experience before coming to Pittsburg included three years at Hamline University and two years at the University of Minnesota.