A THEORY OF CONCEPTUAL LEARNING AND ITS IMPLICATIONS FOR
THE TEACHING OF THE SOCIAL STUDIES FOR THE PURPOSE OF
CLARIFYING SOCIAL ATTITUDES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree Doctor of Philosophy in the Graduate
School of The Ohio State University

By

Lawrence Eugene Metcalf, B.Sc. Ed., M.A.
The Ohio State University
1948

Approved by:

Advisor
ACKNOWLEDGMENTS

The data from the control group could not have been collected without the cooperation of Mrs. Marion Catrell, Mr. Newton Hodgson, and Mr. Lyle Miller all of whom are now on the staff of The Ohio State University. The chapters on theory could not have been written without the assistance of Dr. Alan F. Griffin of The Ohio State University and Dr. Louis E. Raths of New York University. The chapter on economics reflects the teaching and writing of Dr. H. Gordon Hayes of The Ohio State University. The students at Goddard College were particularly friendly and challenging to the writer while he worked with them on this study. Dr. Floyd Jordan of the Atlanta Area Teacher Education Service supplied much of the 'motivation' in the later part of this study and made it possible for the writer to devote most of his time to the completion of the study.

768743
TABLE OF CONTENTS

A Theory of Conceptual Learning ....... 1
The Discussion and Conceptual Learning .... 47
The Learning Environment at Goddard College ... 71
Basic Economic Problems: An Attempt at Conceptual Learning .... 106
Presentation of Data on Consistency of Attitudes 150
CHAPTER I

A THEORY OF CONCEPTUAL LEARNING

It is widely agreed that the promotion of learning is a major task of teachers but this agreement often passes over the question of what kind of learning. A casual survey of textbooks in educational psychology indicates that the textbook writers have at least two referents for the term, learning, and it is not always clear which referent is being used. The writer believes that it would introduce some clarity into the thinking of all teachers if these two referents were clearly identified. Furthermore, the identification of these two kinds of learning will make it possible for teachers to choose the kind of learning they want to emphasize, a choice which is neither necessary nor possible as long as the meaning of learning remains in its present confused state.

One referent for the term, learning, points to the learning of motor responses, verbal or non-verbal, overt or implicit, which are taken as proper and good by the teacher. This kind of learning consists of learning how to do things required of the pupil by the teacher and it sometimes includes the requirement that pupils learn to say that certain ideas are true or false. The writer calls this kind of learning, perceptual learning.
Another referent points to the reconstruction of concepts within a problem-solving process. This kind of learning is largely concerned with the testing of ideas. Students learn that an idea is true or false which is different from learning to say that an idea is true or false. This kind of learning has little to do with the learning of motor responses since it emphasizes a process of problem-solving within which the motor responses vary with the character of the solution. The writer calls this second kind of learning, conceptual learning.

The educational practices which are likely to promote perceptual learning are not likely to promote conceptual learning. For example, the laws of exercise and effect apply very well to perceptual learning. Drill, accompanied by pleasant consequences, will establish those motor responses which the teacher wishes his students to learn. These same laws do not apply to conceptual learning for students reconstruct concepts as reflective thinking is applied by them to their problems.

It is conceptual learning that John Dollard describes in his four steps of wanting something, noticing something, trying something, and getting something. John McGeoch refers to perceptual learning when he says that "learning is a change in performance as a function of
practice, and that "practice is the generic term for any repetition of a material, whether verbal, or non-verbal."

Dollard's four steps do not refer to the random movements of a cat locked in a puzzle box. They refer to the testing of hypotheses which a person may carry forward when he faces a problem. The person who is blocked from getting what he wants may notice certain relationships within his problem-situation which suggest a way, or ways, of getting out of his difficulty. He may then test the suggestion, or idea, in one or both of two ways. First, he may test imaginatively each idea or suggestion that occurs to him. Operationally, this testing means that he attempts to project the consequences of acting upon the most promising of his ideas. Learning is the outcome of comparing and contrasting the acquired consequences with the predicted consequences.

John Dewey has compared reflective thinking to the act of climbing a tree at a fork in the road. The person who knows what he wants in the sense that he knows where he wants to go has a problem when he comes to a fork in the road, and when there are no signs indicating which

(2) Ibid. p. 5
fork leads to his destination. Such a person may approach such a problem in choice by climbing a tree in order to project the consequences of each choice. On the basis of what the person 'sees' in the shape of projected consequences, he chooses one fork rather than another. After the choice is made, the person may get consequences other than what he expected but Dewey believes that reflective thinking, the act of climbing a tree at a fork in the road, increases the likelihood that a person will get what he wants. Dewey considers the attempt to test imaginatively the consequences of a choice more promising than the tossing of a coin, or the habit of acting upon the first impulse. Dewey's illustration should not lead to the misconception that there are only two alternatives for each problem. For many problems the learner does not face an either-or choice. Neither should Dewey's illustration hide from view the fact that one may face a problem without any known alternatives. In terms of Dollard's definition of learning one may not go beyond the first step of knowing what one wants because one fails to get an idea for getting out of one's difficulty. The person who is perplexed may simply fail to notice any relationships which are suggestive.

The failure to get ideas for tackling a problem is bound to happen to the person who has experienced only perceptual learning. It is the possession of concepts which
enables a person to hypothesize. The relationship between the possession of concepts and the ability to hypothesize has been treated by Dewey as follows:

"...Suppose a little speck of light hitherto unseen is detected in the heavens. Unless there is a store of meanings to fall back upon in reasoning, that speck of light will remain just what it is to the senses—a mere speck of light. For all that it leads to intellectually, it might as well be a mere irritation of the optic nerve. Given, however, the stock of meanings built up in prior experience, this speck of light is mentally attacked by means of appropriate concepts. Does it indicate asteroid, or comet, or a new-forming sun, or a nebula resulting from some cosmic collision or disintegration? Each of these conceptions has its own specific and differentiating characters, which are then sought for by minute and persistent inquiry. As a result, then, the speck is identified, we will say, as a comet...."(3)

The belief that the speck of light is a comet is reached by testing the idea that it is an asteroid, the idea that it is a nebula, the idea that it is a comet, and so on. It would not be possible for one to have ideas in respect to the meaning of the speck of light if one did not have the concepts of asteroid, nebula, comet, and the like. The possession of concepts is essential to the having of ideas and the testing of ideas leads to further learning of a conceptual nature. For example, this particular speck of light might be identified as a comet with two tails and this would change the meaning of the comet-concept if all previously experienced comets had been of the one-tailed variety.

6.

An illustration from economics will help to clarify the meaning of conceptual learning for those who teach the social studies. Suppose that a student in economics is seeking to determine the presence or absence of uninvested savings as a characteristic of a private enterprise economy. He may encounter the idea that bankers quickly invest the funds left with them by depositors. In testing the truth of this idea the student may encounter the factor of bank credit which changes considerably his concepts of money and bank deposits. The student could not test for the presence of uninvested savings if he did not have some concepts of money and banking and those concepts in turn might be revised by the experience of testing his hypothesis.

The teacher of economics who wishes to emphasize conceptual learning will find it necessary to start with the problems of the student, or at least try to create problems for the student. He will find it necessary to avoid as much as possible the kinds of problems for which the student has no concepts. It would be useless to attempt to get a person to hypothesize about the meaning of a speck of light in the heavens if all specks of light were the same to him and if the meaning of a particular speck of light was of no great concern to him. If an emphasis upon the perceptual learning of economics is preferred, the teacher does not have to concern himself so much with what the student is bothered about, or with what concepts the
7.
student has on hand. Applying the laws of exercise and
effect to the teaching of economics should result in stu-
dents' learning the required motor responses. From such
a process students can be expected to learn to say that
uninvested savings are inevitable in a private enterprise
economy but this will not mean that they have learned that
such is the case—although a few students may actually be-
lieve what they say. Learning to say that certain ideas
are true rather than examining ideas for the purpose of
discovering which ones are true is the most common kind of
learning at all educational levels in the opinion of the
writer.

A further understanding of what is meant by concep-
tual learning may be acquired from an examination of the
nature of a belief. The writer has said that those students
who learn to say that an idea is true may actually believe
that the idea is true. This is not quite accurate. Stu-
dents may be taught to say that the daily brushing of teeth
tends to prevent tooth decay. Some of the students may not
only say that this is so, some may actually brush their
teeth every day. Those who brush their teeth do not be-
lieve that such a habit prevents carries in the sense that
they have tested the idea with evidence. They do believe
in the habit to the extent of acting upon it. A concep-
tual belief is one which has been examined or tested re-
fectively while a perceptual belief is one which a person
acts upon because in some way the person has associated
truth with the act of saying that an idea is true. In
many cases a perceptual belief is true but the student has
no way of knowing that it is true if he has not submitted
the perceptual belief to a reflective examination. John
Dewey has defined reflective thinking as the "active,
persistent, and careful consideration of any belief or
supposed form of knowledge in the light of the grounds
that support it and the further conclusions to which it
tends." (4)

A belief which is held perceptually may be treated
as an idea, or an hypothesis, whenever a person doubts
its meaning or truthfulness. In the absence of such doubt
the perceptually held belief is mere prejudice. The per-
ceptually held belief which has been treated as an idea
comes eventually to be held or rejected at a conceptual
level. For the teaching of economics this distinction
between idea and belief means that conceptual learning
may be promoted through the reflective examination by stu-
dents of some of the beliefs held by students, many of
which have been learned perceptually, some of which are
no doubt true, some of which are no doubt false. It does
not advance the conceptual learning of the student for the
teacher to confine his activity to telling the student
which of his beliefs are true. The student must determ.
through a process of problem-solving what is true in order for conceptual learning to occur.

A consideration of the problem of attitudes may help to illustrate further this matter of conceptual learning. Schools are traditionally concerned with the attitudes of students. What a school does about the attitudes of its students is illustrative of the kind of relationship existing between the school and the social order. Some schools tend to promote the dominant beliefs and values of the culture and such schools tend to define their role in the field of attitude education as one of inculcating the 'proper' attitudes. Other schools may attempt to promote specific changes in the dominant beliefs and values of the culture. Such schools define their role as one of inculcating 'more democratic' attitudes. Still other schools are so subject matter centered in their approach to learning that they tend to say that attitudes will take care of themselves. Finally, there is a fourth kind of school which encourages critical examination of the beliefs and values dominant in the culture. This kind of school attempts to help students clarify their attitudes by encouraging them to project the consequences of acting upon their attitudes. It is the writer's opinion that the clarification of attitudes is the only thing that a school can do if it wishes to be democratic and if it wishes to promote conceptual learning.

The school which aims to reinforce the dominant be-
10.

Lies and values of the culture does not dare to encourage the reflective examination of ideas since it can never be sure of the conclusions its students will reach. The student who examines reflectively the institutions of private enterprise may or may not come out of his reflection with a conservative conclusion. Because this is so the conserving, or culture-carrier type of school is likely to settle for perceptual learning which includes teaching students the motor response that private enterprise is the most efficient and the most democratic of all economic systems.

Likewise the school which promotes specific changes in the belief-value pattern of the culture can not depend upon reflective thinking. Students who examine the culture critically may not conclude that socialism would result in the abolition of poverty and war. And because this is so the 'democratic' school teaches perceptually that socialism is the road to abundance and lasting peace.

The school which is indifferent toward attitudes and which tends to say that attitudes will take care of themselves is likely to teach subject matter on a perceptual level since no attempt will be made to relate subject matter to the attitudes of the student. A course in anthropology, for example, would not be related by the instructor in any direct way to the attitudes of the students, not even those attitudes shown toward various races. Stu-
dents would learn to say that no race was intellectually superior to any other race but this 'knowledge' would not have anything to do with an attitude of white students toward Negroes.

There is a real sense in which subject matter never has anything to do with an attitude since the expression of a preference in the form of an attitude does not include any question of truth that could be clarified by reference to a body of knowledge called subject matter. However, the person who says that he is in favor of the segregation of Negroes because he wishes to keep the white race pure may change his stand on segregation if the content of anthropology is related to the testing of the idea that a pattern of segregation is related to the absence of miscegenation. Again the testing of an idea with the content of anthropology might not change the attitude since it is always possible for a person to have a basis for an attitude other than the belief under examination.

The school which attempts to bring the student into a critical relationship with the culture will attempt to relate the content of every subject matter to the beliefs and attitudes of the student. This relating of subject matter to the beliefs and attitudes of the student increases the possibility that learning will be conceptual rather than perceptual in quality. If students are re-examining some of their own beliefs, the subject matter
to which they are introduced has meaning in that it suggests that the beliefs under examination are either true or false. If, for example, students in economics are examining the proposition that free trade is compatible with the institutions of private enterprise, then the content of a course in economics has meaning for them any time that the content supports or refutes the proposition that is under examination. Much of the learning in economics, and in other subjects, is perceptual in quality because the content presented by the instructor has nothing to do with the truth or falsity of any belief that the student has any doubts about. The school which refuses to indoctrinate for either the dominant beliefs and values of the culture or for the specific beliefs and values of a new social order is moving away from an emphasis upon perceptual learning. When the teachers of this kind of school begin to relate the content of their special fields to the testing of student beliefs and the appraisal, or clarification of student attitudes, the school is well on the way toward an emphasis upon conceptual learning. Students in such a school learn how to test their beliefs in terms of a process called the scientific method. They learn to anticipate the consequences of acting upon their attitudes and thus the attitudes are clarified. The central value of such a school is the use of the scientific method for the purposes of testing beliefs and clarifying
attitudes.

In summary, there are four possible relationships between the school and the social order only one of which is consistent with a valuing of conceptual learning. One relationship is a conservative one in that the school indoctrinates, and otherwise supports, the dominant beliefs and values of the culture. Another kind of relationship involves the school in the business of determining the specific nature of a new social order. A third relationship has the school concerned largely with the non-controversial aspects of the culture, and learning is confined almost entirely to the three R's and when it goes beyond this one usually finds that the subject matter is not related to the beliefs and values of the student. Each of these three relationships is quite consistent with a valuing of perceptual learning. Only the fourth kind of school, which aims to help the student clarify his beliefs and values so that he reaches an independent conclusion as to the kind of society he wants, is consistent with an emphasis upon conceptual learning.

The indoctrination of attitudes, those which are dominant or those which are favored by the advocates of a new social order, means that perceptual learning sometimes takes the form of students' learning to say in recitation what the teacher requires of them in the way of social interpretation. The possibility of using perceptual learn-
ing as the means by which to indoctrinate a given kind of social order or social interpretation is implied by John Dewey in his observation on the recitation:

"The operations of the teacher's own mental habits tend, unless carefully watched and guided, to make the child a student of the teacher's peculiarities, rather than the subjects he is supposed to study. His chief concern is to accommodate himself to what the teacher expects of him, rather than to devote himself energetically to the problems of subject matter. 'Is this right?' comes to mean 'will this answer satisfy the teacher?'—instead of meaning 'Does it satisfy the inherent conditions of the problem?'"(5)

The recitation is ideally suited to the promotion of perceptual learning but those who teach economics have to depend largely on other methods whenever they wish to promote conceptual learning. It is the writer's opinion that the teaching of economics would be improved with an emphasis upon conceptual learning and this change in emphasis would call for a movement away from dependence upon the recitation as a method. There are many controversial issues in economics and an emphasis upon the recitation and perceptual learning tends to treat the controversial as if it were settled and serene. One consequence for the learner of this smoothing over of controversy through the technique of the recitation is to reduce his chances of learning how to deal with economic issues reflectively. It may also have the consequence of excluding the student from participation in the process of deciding the character of the social order in which he is to make his living.

(5) Ibid. p. 61
Almost everyone who teaches economics says that he wishes to teach concepts as well as information. The failure to do so is no failure in intent. The failure is usually rooted in a misunderstanding of conceptual learning. The writer's claim that concepts are both formed and reconstructed inside a problem-solving process stems partly from the pragmatic conception of the nature of meaning. John Dewey is responsible for the statement that the meaning of an object lies outside the object. That is, an object has meaning for one in terms of what it suggests, or points toward. A cloud in the sky points to rain and that is its meaning. The wind shifting from the south to the north points to a drop in the temperature. The angry expression on a man's face may suggest that he is going to strike the observer.

This separation between an object and its meaning is particularly apparent in a problem-situation; it is not so apparent when an object is viewed on the level of perception. The examples in the preceding paragraph deal largely with perception, or recognition. We have the same thing with the automobile driver who sees a red traffic light. The light points to a meaning for his driving of the car. The meaning is grasped so readily that the object and its meaning seem to be one.

The immediate grasping of what an object means is what we do not have in a problem-situation. Some meaning
is in doubt. Many possible meanings—or none at all—suggest themselves. With many or no meanings suggesting themselves the separation of object and meaning is quite apparent. Problem-solving represents the bringing together of an object and its meaning so that it can thereafter be viewed on the perceptual level. For practical purposes of conduct, there is no separation of object and meaning except in a problem-situation.

The separation of object and meaning within a problem is quite apparent in the following illustration by Dewey:

"Unless there is something doubtful, the situation is read off at a glance; it is taken in on sight, i.e., there is merely apprehension, perception, recognition, not judgment...But if it suggests, however vaguely, different meanings, rival possible interpretations, there is some point at issue, some matter at stake. Doubt takes the form of dispute, controversy; different sides dispute for a conclusion in their favor...A moving blur catches our eye in the distance; we ask ourselves: What is it? Is it a cloud of whirling dust? A tree waving its branches? A man signalling to us? Something in the total situation suggests each of these possible meanings. Only one of them can possibly be sound; perhaps none of them is appropriate; yet some meaning the thing surely has. Which of the alternative suggested meanings has the rightful claim? How is it to be interpreted, estimated, appraised, placed? Every judgment proceeds from some such situation."(6)

The problem of the 'moving blur' is similar to a

---

(6) Ibid. p. 121
previous problem having to do with 'a speck of light'. The meaning of an object is in doubt and the identity of
the object is desired by the observer. The presence of
doubt along with the desire for certainty is characteristic of all problems. The student does not have a
problem if the answer to a question is at hand in the
shape of a motor response. Neither does he have a prob-
lem if he is presented with a question the answer to
which is of no concern to him. It is characteristic
of some classrooms that the only concern which the stu-
dent has about his answers is whether they will satisfy
the instructor. The conceptual learning of the student
is limited to the testing of hypotheses with respect to
the needs of the instructor. The well-prepared student
need not hypothesize about this problem and thus almost
all his learning is perceptual.

The treatment which the writer has given to per-
ceptual and conceptual learning has drawn a sharp line
of difference. If there were more 'moving blurs' in the
teaching of economics, there would be more conceptual
learning as a result. When meanings are in doubt stu-
dents may hypothesize about such meanings by reference
to appropriate concepts. The testing of these hypotheses
could result in the formation of new, or revised, concepts.
Teaching economics on the perceptual level that is charac-
teristic of so much instruction in this subject removes the
need for problem-solving and the reconstruction of concepts. The teaching of economics on a perceptual level can become rather complicated when one is teaching economic theory. Nevertheless it can be done, and it often results in a high level of verbalization in the student, as well as a lack of clarity in his thinking.

Although the difference between perceptual and conceptual learning is a sharp one, it is also clear from an illustration supplied by Boyd Bode that perception and conception are so closely related that we often get an experience which includes both.

"The reason why it is difficult to distinguish between the thing and the meaning of the thing is that in many instances the two are identical.... In other situations, however, the thing and its meaning fall apart. If we see the fire engine in the street with the firemen attaching the hose and a crowd gathering, we at once think of 'fire'... In cases of this kind the perceived object or situation may suggest some other object or event as a separate and distinct thing...."

The illustrations supplied by Dewey have drawn a sharp line between perception and conception. Bode's on the other hand, suggests that the line may not be so sharp. It is questionable whether or not the fire suggested by Bode's fire engine is not a part of the total perception, while in Dewey's example of the moving blur

\[7\] Bode, Boyd H. Conflicting Psychologies of Learning N. Y. D. C. Heath and Co. 1929, pp. 253-254
there is no such question. The example of the moving blur is helpful in pointing up a problem in emphasis that is important for the teacher who wishes consciously to emphasize one kind of learning, although not at the expense of the other kind.

The example of the moving blur, like the example of the speck of light, helps to clarify the role played by concepts in problem-solving. Whenever a meaning is not clear, we may form an idea about that meaning by employing concepts already formed. As we examine an idea for its evidential grounds, new concepts may be formed, or old concepts may be changed in meaning. Thus, it is within this process of problem-solving that concepts have their value. It is within the same process that they may acquire a new meaning. The transformation of a concept is simply described by Bode in these words:

"...the baby that gets scratched, for example, acquires a transformed experience of the cat. The first experience of the cat, as an object to be reached for and handled, is followed by an experience with a different set of reactions, by virtue of which the cat appears as an object that is 'treacherous' or 'burtful' or 'nasty'. The cat looks different and his 'feeling tone' of the experience is different. The experience has acquired a new meaning and a new value."

The child does not form concepts by observing a lot of readymade objects, similar in their qualities, from which he

---

abstracts, at the teacher's request, the common elements. Instead he starts with a meaning for an object which suggests an appropriate way of responding to the object. The situation becomes new, or different, or problematic, whenever the habitual response demonstrates its inadequacy. One may define a problem as a situation within which a response does not produce the expected consequence. Again a problem may exist when no appropriate response suggests itself. In either case, the child is covered with doubt. The child may ask what makes the situation new or different. Reflection, or trial-and-error, may result in the revision of a concept, if not the formation of an entirely new concept.

This is what John Dewey is referring to when he says:

"...the child begins with whatever significance he has got out of the one dog he has seen, heard, and handled. He has found that he can carry over from one experience of this object to subsequent experiences certain expectations of certain characteristic modes of behavior--may expect them before they show themselves. He tends to assume this attitude of anticipation whenever any clue or stimulus presents itself; whenever the objects give him any excuse for it. Thus, he might call cats little dogs, or horses big dogs. But finding that other expected modes of behavior are not fulfilled, he is forced to throw out certain traits from the dog-meaning, while by contrast certain other traits are selected and emphasized..."(9)

Dewey is suggesting that concepts are formed from a process of comparison and contrast, from a process of ab-

---

(9) Dewey, John ibid. pp. 155-156
abstracting common elements, but that this process goes on in a problematic environment. According to his view, it would be bad pedagogy to attempt to teach concepts as if they were learned outside a problem. Suppose that a child were shown many different kinds of triangles. The child could not be expected to abstract from these triangles the common elements which would constitute a concept of triangle. This kind of abstraction takes place from problem to problem and thus concepts are constantly undergoing reconstruction. No single concept acquires a final meaning.

What Dewey would consider the wrong way in which to teach concepts may be illustrated by reference to the usual way of attempting to teach a child the concept of the earth's sphericity. The child is shown a baseball, or better still, a globe. He is told that this is the shape of the earth. From this process he can not be expected to grasp the sphericity of the earth as a concept. He may through repeated experiences with the baseball get the notion of sphericity. He may learn to say that the earth is "like that." He may even learn to imagine that the earth is "like that." But in order for him to grasp the sphericity of the earth as a concept he must acquire such a meaning in a situation that is clarified by the idea of a spherical earth. For example, a child may wonder why the mast is the last part of the ship to disappear
on the horizon and this may be clarified for him by the suggestion of a spherical earth.

In the teaching of economics the illustration often takes the place of a directly viewed object. These illustrations can be effective in the promotion of conceptual learning if they make use of concepts already familiar to the student, and if they are used to clarify the problems of the student rather than merely the problems of the instructor. For example, one could expect to make little progress toward the formation of a concept of uninvested savings through the use of an illustration that employed concepts that were unfamiliar to the student. The new concepts of uninvested savings would have to be illustrated in terms of concepts that the student had already derived from experience. Moreover, one would not expect the student to grasp uninvested savings as a concept except in a situation that would be clarified by such a concept.

Ideas, beliefs, concepts, and problems are all closely related. A student in economics has the problem of explaining the occurrence of mass unemployment in a private enterprise economy. The idea that such unemployment is caused by uninvested savings is suggested to him by, let us say, the instructor. The student has the concept of uninvested savings illustrated for him in terms he is familiar with. He then tests the idea that uninvested sav-
ings are causally related to unemployment. Evidence is searched for on the basis of what is found the student reaches some belief about the causes of unemployment. As a result of moving from the level of idea to the level of belief, a problem has been clarified and, no doubt, the concepts of private enterprise, investment, unemployment, savings, bank credit, and the like have had their meanings transformed. The way in which babies transform the meaning of cat is not greatly different from the way in which graduate students transform the meaning of many of their concepts.

It should be apparent from what has been said so far that a concept is a body of meaning which enables one to respond intellectually to that which is not perceptually present. In Dewey's notable phrase, a concept enables an object to be 'present as absent'. The clouds which point to rain suggest that one should carry a raincoat. One is able to say to himself that if it rains, a raincoat will keep out the dampness. This ability to anticipate an event by resort to concepts is one of man's most prized possessions. The conceptualization of experience enables man to respond in a more meaningful way to the sights, sounds, feelings, and other awarenesses of his perceptual life.

A chief difference between man and other members of the animal kingdom is man's greater ability to form con-
cepts. The conceptualization of experience gives man a great advantage over other animals in the matter of dealing with problems. Man does not have to rely solely upon the method of 'cut and try'. Man is able to substitute imiation for the overt movements of trial and error. This difference between the experimental approach to problems and that which is taken in the absence of the ability, the opportunity, or the inclination to conceptualize is a significant one. Margaret Wooster Curti(10) is one of the few psychologists who has dealt clearly with the similarities and differences between experimental problem-solving and the overt mode of problem-solving. Both ideas and overt movements may occur in a problem-situation. Many, few, or no ideas may be tried out just as many, few, or no overt movements may be tried out when a person is perplexed by a problem. The difference lies in the fact that in experimental problem-solving the concept takes the place of the overt response. This means that, for the moment, imaginary consequences take the place of sensory consequences. Sensory pain or pleasure has as its substitute ideational pain or pleasure. William James has referred to this difference in his statement that "the intellectual life of man consists almost wholly in his substitution of a conceptual order for the perceptual order in which his experiences

(10) Curti, Margaret W. Child Psychology
    N. Y. Longmans, Green and Co. 1940, p. 300
Although prior conceptualization helps us to solve problems more effectively, we can never wholly avoid the trial and error aspect of learning. Even though we use a rich store of carefully refined concepts in the imaginative projection of consequences, we may find that our predicted consequences do not come to pass. This possible error in prediction does not make reflective thinking wholly valueless. The suspension of judgment before action is taken should result in a closer correlation between what we set out to accomplish and what we actually accomplish. Every idea may be tested in two ways; it may be tested reflectively and it may be tested in action. The reflective examination of ideas is for the purpose of determining which idea is the most promising for action. Action is the supreme court of learning, and every promising idea must pass the test of trial. Suppose that a man wishes to decide whether he will take a train, bus, or plane to his destination. It would not be practicable for him to try each one before making a decision. After a reflective examination of the three alternatives, he decides in favor of the train. This decision may prove to be a wrong one in that he may fail to get the consequences he anticipated. He learns then from trial and error even though his initial decision could not

(11) The Philosophy Of William James
have been made on this basis. Many problems in economics can be approached in terms of the most promising idea. Since the possession of concepts enables one to hypothesize, there is a place for conceptual learning in economics as long as those who teach this subject value an experimental approach to economic problems.

The attempt to be scientific in economics is certain to fail in the absence of conceptual learning. Dewey has said that "there is no such thing as experiment in the scientific sense unless action is directed by some leading idea."(12) When one faces a problem without an idea for solving it, there is no direction to the experiment. One does not know what evidence to look for. If there is an idea or hypothesis—a "candidate for truth"—direction is given to the experiment as facts are sought which would refute or support the idea being examined. It is thus that dispersion of activity and the collection of irrelevant facts is avoided. Since ideas have this organizing function, a rich supply of carefully defined concepts is essential to the student who wishes his research to get somewhere. Concepts are useful in all research, whether it occurs in the graduate school or in the ordinary stream of human activities.

The person who faces a problem with an idea may use the

(12) Dewey, John Experience and Education N. Y. Macmillan and Co. 1938, p. 103
method of prediction and verification. He may predict that certain data will be present if the idea is true. The use of concepts enables him to express a relationship between objects and their meaning which will be true if certain facts are discovered.

It is also possible to use what Bagley has called 'explanatory deduction'. One may notice certain facts and explain them by reference to an idea which occurs to one as the facts are noticed. After doing this, one may go back to the facts again in order to ascertain whether they really fit the idea. The idea is then tested more completely by predicting the presence of yet other facts which should be present if the idea is true.

Boyd Bode's famous problem of the broken window illustrates the processes of 'prediction and verification' and 'explanatory deduction' and the role of concepts in both processes:

"Let us suppose that a person enters a room and finds a broken windowpane. What is the cause of the damage? Perhaps the glass was broken by boys while playing ball. This suggestion or hypothesis furnishes a starting point for further inquiry. He notes next that the broken glass is mostly inside the room, which indicates the pane was broken from the outside. In the center of the broken pane is a circular hole, such as might be made by the impact of a ball. These facts are noticed and are explained by reference to the hypothesis; viz., that the damage was done by a misdirected ball. To explain means to reconstruct the situation by means of concepts. If the ball hit the window, it would be likely to make a circular hole and it would force the broken glass inward so as to make it fall on the floor of the room. As we sometimes say in explaining facts of this kind; 'that is just what you would expect'. . . . . . . We combine certain meanings such as the concept of a fast-moving baseball with a
further meaning that of an intervening window pane, and in some way we get as a further meaning; viz., that the glass will be broken and the glass forced into the room..." (13)

One may predict the presence of a baseball in the room, and if it is found, the idea has been verified.

The problem of the broken window illustrates once again the character of all problems and the role of concepts in the process of solving problems. In a problem one moves toward some kind of judgment or choice. Those who teach economics, and other subjects, have a problem in choice concerning the kind of learning they want to emphasize. Operationally speaking, choice consists of seeing that there are alternative meanings or alternative courses of action, of testing alternative meanings or of predicting alternative consequences for alternative courses of action, and of coming to value one set of consequences more than another. This last operation is typical of choices to be made in the area of moral behavior. Many teachers who emphasize perceptual learning have not chosen to as they have simply not been aware of conceptual learning as an alternative emphasis.

A summary of the differences between perceptual and conceptual learning will help to make clear the nature of the choice in emphasis which we face as teachers. Percep-

tual learning promotes 'right' answers, 'good' habits, 'useful' skills, and 'proper' attitudes. What is right, good, useful, and proper tends to be a reflection of teacher requirements. Perceptual learning in the social studies takes the form largely of 'proper' attitudes, 'right' social interpretations, and other 'facts'. Students who learn to say and to do the 'right' things do not necessarily learn how to solve problems. Learning the processes of problem solving is consistent with an emphasis upon conceptual learning. An emphasis upon conceptual learning is consistent with an attempt to clarify an attitude. Conceptually speaking, a 'good' attitude is one which has been grounded in predicted and verifiable consequences. A 'right' answer is one which has been grounded in experimentally obtained evidence. A 'useful' skill or a 'good' habit is one which serves a consciously held purpose.

Conceptual learning takes place inside a problematic setting. Perceptual learning does not require the presence of uncertainty, but it is easy to 'slip over' a motor response when a student is grasping for something that will give him security. A teacher may create doubt in a student in order more easily to put over a particular motor response. This is not teaching for conceptual learning. It is more akin to the operations of salesmanship. The teacher who aims to achieve conceptual learning with his students
must accompany the creation of doubt with the intent to free his students for experimentation or inquiry. From experimental thinking may arise the conceptualization that the teacher wants.

The teacher who is aware of these two kinds of learning may choose his emphasis. The writer does not believe that the teacher faces an either-or choice. One may emphasize conceptual learning without giving up entirely the goal of perceptual learning. In fact, the very solving of problems which contributes to the refinement of concepts will also add meaning to the objects of perception. The writer hopes that all teachers—and particularly those who teach economics in college—will choose to value conceptual learning. They need not do so, however. The choice in emphasis is left to each teacher. The writer does believe that this choice can not be made wisely except as teachers are aware of the social consequences that accompany an emphasis upon one kind of learning rather than another. The rest of this chapter will attempt to relate the choice in learning to a field of social consequences. This has been done already to the extent that the writer has related conceptual learning to the solving of problems and the clarification of attitudes, but the relationship between the kind of society that one wants and the kind of learning that contributes to such a society can be clarified further.

An educational program that consisted largely of per-
ceptual learning would fail to equip the individual with the resources in concepts and in processes which he would need in order to deal successfully with all the difficulties which his education had failed to anticipate. Since we can not foresee the motor responses which will be needed in the future, we must give the student an understanding of a process by which to 'figure out' what responses are called for in a problem-situation. This process can not get very far if one lacks a conceptual background.

Our culture is changing so rapidly that the motor response adequate for today is inadequate for tomorrow. Of course, there are exceptions. The ability to use numbers will be useful for a long time to come. However, the learning of sheer numerical skills will not help one to solve problems if those skills are learned in the abstract, if they are learned out of association with the solving of problems. Number concepts can not be acquired from an education that takes place almost entirely on the perceptual level. Many of the problems in mathematics, for example, are not problems, just as many of the experiments in a chemistry workbook are not experiments. They are not problems nor experiments because they are unrelated to the testing of any beliefs or values that are of concern to the student.

The way in which habits may get in each other's path is an example of the kind of problem for which perceptual learning has no answer. Motor responses in the shape of
habits, however good they may be intrinsically, have the
habit of conflicting with each other. Any number of every-
day observations establishes the fact that habits do con-
lict with some regularity. A man may hold the habit of
being honest in his relations with other people. He may
also have the habit of making the most of his economic op-
portunities, of pursuing what Charles Beard has called
'the main chance'. In this culture both habits are con-
sidered good. Their goodness does not prevent them from
coming into conflict, since many an opportunity has a de-
gree of dishonesty as its basis.

A conflict in habits or values, provided that the
conflict is a conscious one, presents two possibilities.
One may act according to one habit or value without con-
sidering the consequences of the choice. This is the easy
and usual way of handling such a conflict, since it avoids
the labor of reflective thinking. The matter is quickly
settled and one escapes the insecurity of a problem. Not
only is this the most common way of settling conflicts, but
it is also the only solution that is possible within the
limits of sheer perceptual learning.

A second approach attempts to predict the consequences
of acting upon each habit or value. One then makes a value
choice between the two sets of consequences. This approach
enables one to see more clearly what one is doing and valu-
ing. It treats habits as tools with which to achieve valued
consequences.

An emphasis upon perceptual learning in the field of habits and values could have at least two consequences. One consequence could be frustration in the face of any value conflict, since the individual would not have any resources for dealing with such conflicts. Another consequence could be that of lacking clarity in one's values. Values acquire clarity as they are appraised and compared in a conflict situation. This appraisal includes the projection of consequences—a process which can not occur in the absence of conceptual learning.

The social studies are an ethical discipline; they pose many problems which call for choices among conflicting values. The current controversy over the third party movement led by Henry Wallace is a case in point. There is a value for some people in having an opportunity to vote upon the program offered by the Wallace group. Some of the same people value a defeat of the Republican candidate. Such people are afraid that a third party movement will result in a victory for the Republican party. At the same time these people value three political choices rather than two, or one and a half. This is the kind of conflict in values which is of the essence of a moral problem. There are many such conflicts arising in the social studies from day to day. Such conflicts can not be handled in the least reflectively in the absence of a conceptual background.
34.

An historical reference helps to clarify further this matter of value conflicts. During the controversy over states' rights which culminated in the Civil War, it was apparent that some people, particularly those in some of the border states, had to choose between two loyalties. These people had developed a feeling of attachment for their national government. They also had some attachment to their local and commercial interests. A choice was necessary. The northern industrialist was more fortunate in that there was no conflict between his nationalism and his commercialism.

There is a proper place for perceptual learning, but it is not in the field of moral values. During the second World War there was a recognition school at Ohio State University conducted by the U. S. Navy. The term recognition was well chosen, since that is all that perceptual learning ever involves. The fact that the school was conducted by the Navy is of more than academic significance since militarism in any form could hardly tolerate much conceptual learning. The purpose of the school was to teach young men how to recognize the silhouettes of planes in a fraction of a second. It was valuable training, although it did not aim to teach thinking. There is a place for this kind of learning in almost every educational institution, but it is necessary to do more than this if people are to be prepared for the making of moral choices. One does not learn morality in a recognition school.
The social studies are largely moral in the problems they present, but even so there is a place for perceptual learning. Students in the social studies sometimes have to be shown how to do things, and this falls within the area of perceptual learning. Nevertheless, the show-how kind of teaching does not help very much in the resolution of value conflicts. The writer does not insist upon a valuing of conceptual learning; he only means to say that a valuing of conceptual learning is consistent with and essential to the valuing of a society in which people are free to participate in the creation of their own values. Since new values are created from conflicts in earlier values, the writer does not see how the creation of values can go on in the absence of a great emphasis upon conceptual learning in the social studies.

The relatively simple approach to the teaching of the social studies which would emphasize perceptual learning would fail to help students develop in the capacity to foresee the consequences they were creating. In the training of research physicists, educators have been unwilling to settle for the learning of motor responses. What would be gained from an emphasis on perceptual learning in the education of citizens? The problems which persist in the social studies are no less important than the problems of research physics. In fact, the problems of the citizen often have their origin in the degree to which the physicist excels the economist in prob-
The ordinary citizen faces problems every day which do not differ from the problems of the research physicist in the character of the method by which they can be solved. The operations may vary with the kind of material upon which she is working, but the method is essentially the same for all kinds of problems. The citizen as well as the physicist needs a theory by which to explain experience. The citizen as well as the physicist faces problems which can be solved reflectively. When educators begin to emphasize conceptual learning in the social studies, the citizen will be in a better position intellectually to go after the social consequences that he wants. He will be in a position to use the same general approach to social problems that has brought so much success to other areas of research.

The age at which the emphasis upon conceptual learning begins will vary with the student, the subject matter, and the skill of the teacher. Under present practices many students are ready for an emphasis upon conceptual learning long before such an emphasis occurs. It is possible for a student to go through college with little or no conceptual learning as a consequence.

Much of the teaching in the elementary school results only in perceptual learning. Perhaps this is the way that it must be. It is often necessary to show students how to do things before they understand fully what it is that they
are doing. Later they are mature enough to deal with the significance of what they have been doing provided that conceptual learning has received the maximum emphasis possible in each stage of their development. In the writer’s opinion, it is bad education to teach perceptually that which the learner is ready to deal with conceptually. The fact that students can not think about certain complex matters in their childhood does not preclude their thinking about more simple matters. Neither does it preclude their thinking about the more complex matters later in life.

This re-examination of childhood acquisitions can go on in adult life if at each level of their development the greatest possible emphasis has been made upon conceptual learning. Somewhere between the kindergarten and the college, the emphasis for students should change from the perceptual to the conceptual. It had better occur before the college experience, since many students never finish or go beyond the high school. There seems to be little ground in psychology for a lack of emphasis upon conceptual learning in the college. If the shift from a perceptual to a conceptual emphasis has not been made by the time a student reaches college, the failure to do so can not be justified by reference to any innate immaturity of the student. There might be a ground for the claim that the high schools had done so little about conceptualization that the college student did not have the acquired maturity with which to work. This
would still not justify the college in its failure to change
the emphasis, since the nature of man is such that he will
conceptualize somewhat despite all the bad education to which
he is exposed. The college could always start with whatever
acquired maturity it had to work with.

A part of the emphasis upon the teaching of motor res-
ponses in the grades, the high schools, and the colleges is
probably due to the fact that many teachers find this the
easier thing to do. This emphasis may be due also to the
fact that many teacher-training institutions fail to dis-
tinguish between two kinds of learning. Thus it is that
many teachers are not aware of the learning alternatives
they may face.

An explanation of the emphasis upon perceptual learn-
ing must go beyond the personal habits of teachers and pro-
fessors. The cause of truth is advanced very little by at-
taching blame to this teacher or that professor. Why is it
that the schools and colleges attract, hold, and promote the
teacher who is adept at the flashing of cards, the pushing
of mental buttons, the asking of leading questions, the is-
suing of rewards and punishments?

The problem stated in this way takes one once again
into the relationship between school and society. It is
necessary that the teacher emphasize perceptual learning as
long as the school has the conservative function of preserv-
ing the culture and all its sacred cows. The role of the
school sometimes fails to be democratic because there is so much in the culture that is undemocratic. It seems to the writer that the emphasis upon perceptual learning in the schools is largely a product of social conditioning rather than of any deliberate choice on the part of American educators. Schools and colleges are conditioned to teach in ways that make reflexes dominant over reflection.

Even the complex matter of the moral education of the young is treated on the simple level of establishing appropriately automatic responses of the child to his culture. One of the best places to look for the presence or absence of democratic values in a culture is within the process of moral education. Every culture has such a process, and in this particular culture the attempt is made to achieve morality in the young by teaching them perceptually the precepts of the prejudiced adult. There can be no other approach in a culture that would protect itself from scientific scrutiny. Along with the rejection of science as a method for clarifying moral issues is a basic distrust for the intelligence of the common man. Implicit in the emphasis upon perceptual learning is a conception of society which would restrict thinking and the making of choices to a very few citizens—those few who have the right connections.

As a consequence of the emphasis upon perceptual learning in the social studies few citizens know what they are
about in the area of social change. Society changes; no one disputes that it is changing; but there are few who sense the direction in which it is changing. Even fewer are those who are sure about the direction in which they want change to occur. This is bound to be so in the absence of any large-scale attempt to clarify the values that are at stake in the social issues of today.

Those teachers who choose, or find easy, or discover to be necessary, an emphasis upon perceptual learning often drift quite naturally into a method of teaching called the recitation. How recitation differs from discussion will be considered in the next chapter. The recitation leads to what has been called 'the teacher dominated school'. The implication for the learner is that the teacher becomes almost the sole determinant of the requirements characteristic of the learning process. The requirements of the student suggest improper goals for those teachers who call the signals of perceptual learning. What the student requires as he seeks clarification in his values is irrelevant for them.

The teacher who chooses to emphasize conceptual learning will find it necessary to draw a line between that kind of perceptual learning which helps to solve problems and that kind which diverts teaching from the consideration of problems. The learning of skills may provide students with assets for the solving of problems, and the teaching of such skills is largely a matter of perceptual learning. The teach-
ing of beliefs and values on a perceptual basis, however, provides the students with unrecognized problems rather than with assets for solving problems.

Those students who are taught skills sometimes come to value a kind of education which emphasizes the learning of specifics. This valuing may be on an unconscious and inarticulate level. This suggests to the writer that the teaching of any skill should include the attempt to make articulate the values the student hopes to advance through the learning of that skill. As students became more clear in their values they would see more clearly what skills they wished to acquire. Some skills may be taught before students have accepted their value, but this purely perceptual teaching of a skill may be defended only so long as it does not shut off growth in clarity of values. The thing to be avoided most of all is the perceptual learning of beliefs and values.

In short, the teachers of the social studies who emphasize conceptual learning as a matter of choice will take quite naturally a different view of perceptual learning. Habits will be looked upon as tools with which to get done those things pertinent to the solving of problems. The student who wanted to clarify the relationship between the rents paid by people and the incidence of tuberculosis might want to learn how to draw a community map upon which to place some of his data. The perceptual learning involved in drawing such a map would be related to the clarifica-
tion the student was seeking.

The matter of students' achieving greater and greater clarity in what they believe and value is an educational goal bound up with the survival of democratic living. The perceptual learning of beliefs and values often means that students learn to respond blindly to the sign and symbols of the culture. Many of the signs and symbols are class-structured, so that response to them promotes undemocratic consequences. Furthermore, there is a sense in which any blind response is undemocratic, in that the individual does not know what he is doing.

Instead of teaching students to say that 'democracy is the best form of government' the teacher with a conceptual bias will help his students to think through problems in which democratic values are at stake. This is the kind of learning which students must experience if democracy is to have a conceptual meaning. It does not promote clarification much for the teacher to work toward the motor acceptance of slogans. It is true, however, that education may produce cultural unity by teaching the same values to everyone. This tends to remove from the culture conflicts between individuals and between groups. It does not remove the very great possibility of insoluble value conflicts within the value structure of a given individual. Teaching for clarification rather than cultural unity helps each individual to deal successfully with his own value conflicts.
The same kind of teaching can deal with value conflicts between persons and groups.

One person may value socialized medicine. Another may value the present method of distributing medical services. The use of thinking can not determine which method should be valued until the two methods are treated as possible instruments for the achievement of some cherished end. The process of clarification includes the attempt to determine what the cherished end is to be. It also includes the testing of some such proposition as that 'if we socialize medicine then the death rate of the low income groups will be lowered'. In brief, it would not be possible to test the simple statement that 'we should socialize medicine', since the statement in such a form does not create a hypothetical link between policy and consequences.

In a problem some values may be instrumental while others may be intrinsic. A person may value A, the reconstruction of war torn Europe. The same person may value B, the distribution of aid to Europe on a non-political basis. As long as A and B are in harmony they exist as intrinsic values. Suppose, however, that a situation arises such as the proposal of the Marshall Plan. Support of the Marshall Plan might conceivably contribute to the reconstruction of Europe but it would do violence to value B. When the two values are in conflict they may be instrumental in quality when each is viewed as a possible instrument for
the achievement of some valued end called C, such as the promotion of peace between Europe and the United States. For the moment C is an intrinsic value. One will act upon A or B according to which one gives the better promise of promoting C. The intrinsic value C may in the future acquire an instrumental quality when it is thrown into conflict with another value. This is no denial of the fact that within any given moral problem one can discover intrinsic and instrumental values. To assert of a value that it could never become instrumental is to assert that it is an absolute.

This experience of clarifying values as they become instrumental in quality is an experience in conceptual learning. Such an experience may cover conflicts between persons and conflicts within a person. The teacher who wishes to achieve conceptual learning through the clarification of values must be informed on the value conflicts of students.

In economics the student who favors a favorable balance of trade for the United States has an implicit conflict in values which may be raised to a conscious level by the teacher who wishes to promote conceptual learning. As the students express their values it is possible for them to test their beliefs, to clarify their values, and to grow in their ability to solve problems reflectively.
Instead of exploring with students the values they hold, the teacher of economics may simply tell them that an excess of exports over imports makes it difficult for a nation to collect debts owed to it. This statement may be taught as a motor response outside a problem situation. The student may be rewarded for making such a statement on an examination paper. The learning of this kind of motor response does not fit the students for the solving of any problems they may face in the future. Transfer of training is at a minimum. Furthermore, this kind of educational practice in the teaching of the social studies encourages both a shallowness of understanding and a kind of intellectual dishonesty in students. Cheating on an examination in order to make the appropriate responses becomes intelligent student policy. 'Cribbing' in the form of notes written or memorized the night before the examination also becomes a valued practice among students.

An instructor in economics may attack critically a given economic theory. One should not expect very much from this practice alone, as it contributes to the conceptual learning of the instructor more than it does to that of the students. This is an effective method for selling merchandise, but it does not accomplish much in the way of clarification. The writer does not mean to imply that there should be external restrictions upon the teacher's freedom of expression. Teachers who wish to promote conceptual
learning will use their freedom with restraint. The restraint comes from the purposes of the teacher rather than from outside pressure groups.

In conclusion, the kind of learning which the teacher chooses to emphasize will depend in a large measure upon the kind of society he wishes to support and work for. If the teacher wishes to help his students to achieve clarity in the values and beliefs by which they live, an emphasis upon conceptual learning becomes one of the teacher's values. The writer does not urge that all teachers ought to reject percursor learning for conceptual learning. They "ought to do" what is consistent with their purposes. He has simply argued that a valuing of a democratic and experimental social order is consistent with a valuing of a maximum emphasis upon conceptual learning at all educational levels, and that the latter kind of learning is a practicable goal for most college teaching in the social studies.
CHAPTER II

THE DISCUSSION AND CONCEPTUAL LEARNING

The methods of the teacher will vary with his purposes, although purpose is not the only factor influencing the choice of method. Purpose is one of the very important factors to be considered in the choice of method, and those teachers of the social studies who wish to emphasize conceptual learning must choose methods which are appropriate to their purpose. The writer believes that the democratic and experimental discussion is one of the promising methods for the achievement of conceptual learning.

The planning of the teacher must not only adjust method to purpose but also it must consider the question of content. Planning for perceptual learning quite naturally gives attention to content. The teacher plans his course of study quite specifically in terms of the content he wishes to cover. Planning for conceptual learning must also take content into consideration; the teacher must have some notion of what he intends to teach such as knowing what big ideas, big issues, big problems he wants to consider with his students. But the nature of conceptual learning is such that the teacher must know something about the previous learnings and present interests of his students before he can be at all sure what specific content
is appropriate.

The teacher who is in the habit of valuing perceptual learning may be more specific in his early planning of content because he does not have to concern himself so much with learning about his students. He can go ahead, if he wishes, and present content which he values and knows best of all. It is because conceptual learning calls for the relating of content to what the student already 'knows' that many teachers find it easier to teach for perceptual learning. The teacher who would work toward conceptual learning must have an unusually good grasp of his subject matter. He must know it so well that he can relate it to whatever the students happen to say.

It is one thing, for example, to know the content of American history in terms of one organization which may be followed by those who prize an emphasis upon perceptual learning. The case is quite different to know a subject matter so well that one may organize it in any way that is suitable for the problem under examination.

In addition to the subject matter which the teacher brings to the classroom is the subject matter which the student brings in the shape of beliefs, attitudes or values, and problems. Conceptual learning takes place when these two subject matters come together. The teacher must relate his special subject matter to the ordinary concerns of the student if the former is to have any meaning for the student.
The discussion method is more promising than the lecture as a means by which the teacher may become acquainted with the beliefs and values of his student. The discussion may be supplemented with certain paper and pencil techniques, but the oral expressions, provided that they are freely given, constitute more valid evidence of what the student is thinking and feeling. Through a free discussion the teacher may identify conflicts and problems that are characteristic of his students. When a student says what he wants, or when he says what he is for or against, he expresses his attitudes or values. For some purposes it is desirable to distinguish between an attitude in general and the particular kind of attitude called a value, but it is not necessary to do so in this discussion. Students in the social studies may have opportunities to say what they value when a controversial issue is under examination. The discussion of such an issue may help the teacher to become informed about the values of his students.

The lecture method reduces oral expression by the students to a minimum, while the recitation requires them to say what the teacher expects in the form of right answers. It is because perceptual learning results in these right answers that it gets in the way of conceptual learning.
A consideration of the educational problem of prejudice may help to indicate how discussion may be used for the purpose of conceptual learning. Although educators are concerned about the prejudices of students, they do not agree on the nature of the problem nor upon the proper approach to the problem. A part of the disagreement goes back to a difference in the definition of a prejudice. Some educators define a prejudice as a false belief, as a misconception. Other educators define a prejudice as any belief for which the person holding it has no evidential grounds. In other words, this latter group defines a prejudice as a preconceived notion which may or may not be true; but no one can say which is the case in advance of reflective examination.

It makes a difference for the operations of the teacher whether the beliefs of students are regarded as misconceptions or preconceptions. It is easy for the teacher who defines a prejudice as a false belief to drift into an emphasis upon perceptual learning. The previous learning of students is regarded by the teacher as largely false. It becomes the job of the teacher to set his students straight, and remedies for prejudice take the form of promotional campaigns. This approach, moreover, is comforting to the teacher, as it implies that his own beliefs are largely unprejudiced.
Those teachers who define a prejudice as an unexamined idea acquired from the culture are more likely to carry on operations consistent with a valuing of conceptual learning. Such a teacher has the job of helping students to examine some of their ideas in terms of the grounds that support or refute them. He not only uses discussion to find out what his students believe; but also he tries to find out whether they have any evidence for what they believe. All ideas expressed by the students are in this respect treated alike by the teacher. He does not accept a statement as unprejudiced simply because he agrees with it.

This process of requiring from the students evidence for what they say gives the teacher additional understanding of his students. It may also help the students to achieve clarity in what they believe. This is good discipline for those students who wish to become better thinkers. This kind of approach to prejudice avoids the practice of making the teacher the 'unprejudiced' authority on prejudice. It makes the scientific method the authority for the acceptance or rejection of an idea. This entire process is consistent with the achievement of conceptual learning.

While the discussion method is promising for the achievement of conceptual learning, it often fails to fulfill its promise because of the way in which it is
used. Some discussions, for example, are free enough but not experimental enough. A discussion must be both free and experimental if it is to contribute to conceptual learning. That is to say, it must represent the scientific method in action. Sometimes discussions fail to be experimental because the teacher does not know what to do with an idea after it has been expressed. Teachers do not always recognize that the statements of students must take the form of carefully stated hypotheses before they can be treated scientifically. The free discussion of a controversial issue can not result in conceptual learning unless some of the ideas expressed are tested by an application, however limited, of the scientific method.

The statement that 'everyone should be allowed to vote without paying for it' is not, in that form, an hypothesis. It can not be tested until two things happen to it. First, it must be recast so that it refers to a matter of truth rather than a matter of value. Second, the truth of the recast statement must be in doubt. When any statement of a student possesses both of these qualities, it may be regarded as an hypothesis.

The statement that 'everyone should be allowed to vote without paying for it' is a declaration of values by the student. It reflects a student's preference. There is no question of truth in the statement, and
probably there is also no question of truth in the mind of the student. The statement may be transformed so that it refers to belief rather than value by getting at the consequences the student wishes to avoid or promote. If it develops that the student wishes to avoid minority rule, he may be encouraged to formulate the proposition that 'if people have to pay in order to vote then fewer people will vote.' If any student has doubts about the truth or falsity of this statement, it is an hypothesis for him and the truth may be determined by reference to evidence that is of a public nature. One could, for example, compare the proportion of eligible voters who vote in poll-tax and non-poll-tax states.

The use of facts within a discussion, then, must be preceded by the formulation of hypotheses in order for the discussion to reach a fairly advanced stage of experiment. The use of facts can help one to formulate hypotheses, but facts can not play the role of evidence until there is a proposition for them to go to work on. Discussions are likely to draw out such statements as 'I don't like the Russians,' or 'I believe that the government should prosecute monopolies.' Every such statement is attitudinal or valuational in nature and every such statement can be tested only after it has been transformed into a proposition. The statement that 'if the government prosecutes monopolies there will be less
unemployment' is an example of what is here meant by a proposition, and such a proposition is either true or false. The probability of its truth can be tested with the use of agreed upon facts.

The role of information in a discussion should be of this evidential nature if conceptual learning is to be promoted. Using the content of economics, let us say, in this way can prevent discussion from becoming a fruitless argument between the 'shoulds' and the 'should nots.' One has to be careful that the opinions of the teacher are not taken as 'information.' Students must learn something about the processes by which information acquires the qualities of information. This enables them to acquire a basis for belief other than reliance upon what is said to be true by the teacher.

Information can tell the student what is true or false, but it cannot tell him whether he should value tomato juice or the prosecution of trusts. Does this mean that the teacher must ignore the values of his students, since the teacher is not an authority on values as a result of any information he has? If the teacher ignored the values of his students, he could hardly hope to promote conceptual learning. Can the teacher help students to become more scientific about their values? He can if he relates the value statements of students to the consequences students intend to promote by acting upon their values.
The student who says that he wants governmental regulation of unions may imply a set of consequences that he wants to promote. Relating the proposed course of action to a set of valued consequences results in the formulation of a proposition (idea, suggestion, hypothesis) which can be tested. The teacher who wishes to do something with attitudes or values that is scientific and non-authoritarian may encourage his students to express the consequences implied in their non-propositional statements. The scientific method can then be used to test for the validity of the relationship stated to exist between policy and consequences. This process may occur within discussion, and it is consistent with the theory of conceptual learning stated earlier.

Most students have received very little training in the scientific method and for this reason they are likely to make initially many non-propositional statements. In a discussion one is likely to hear such statements as 'I don't like the Jews,' 'Negroes should not go to school with white children,' 'the government should let the business man alone,' and 'we should not share information about the atomic bomb with anyone but an Englishman.' Such statements reveal to the teacher some of the values of his students. He can help his students become more certain of their values as he requires them to test propositions having to do with a stated policy.
and a preferred set of consequences.

This testing of relationships said to exist between policies and consequences is all that science can do in the area of moral problems. Science cannot test the goodness of an intrinsic value. This latter limitation should not bother those who wish to be scientific about moral questions, since there is never a moral question except when values have acquired an instrumental character. Instrumental values may be tested by asking whether action upon them would promote the consequences that are wanted. These valued consequences, in turn, may become instrumental in quality when they conflict with another set of valued consequences.

Whether a problem is chiefly physical or social in its subject matter, facts and values are present. The real difference between the physical and social sciences is not the presence or absence of values. The real difference is the greater difficulty of formulating and testing hypotheses in the social sciences. This greater difficulty is rooted in the failure to develop 'laboratory' techniques appropriate to the subject matter of the social sciences. The failure to develop such techniques is partly due to the belief that the techniques can not be developed. Learning to transform 'should' statements into 'if-then' statements represents one 'laboratory' technique that has been developed.
This technique fits into the general pattern of a free and experimental discussion. The same may be said of other techniques to be described in a later chapter. The clarification of values is an educational goal that is conceptual in quality and this goal is appropriately related to the use of discussion. In colleges and universities discussion is not uniformly the preferred method. The typical college or university relies heavily upon the lecture method. Sometimes the lecture is modified to include the discussion.

The lecture is easily distinguished from the discussion, but sometimes a recitation is inaccurately referred to as a discussion. College courses which are listed as lecture-discussion experiences are often lecture-recitation in character. For this reason it would contribute to clarification for the writer to define discussion and recitation in a way that makes them recognizably different.

It has been said already that a discussion with conceptual ends is both free and experimental in its dominant traits. A discussion will vary with the purposes of the group. Sometimes a group will hold a discussion in order to identify some problems which it wishes to attack. Sometimes a discussion will center upon the matter of clarifying an issue. Sometimes a discussion will be concerned with the relating of evidence to an hypothesis.
Sometimes a discussion will attempt to reconcile differences within a group. Sometimes a discussion will take the form of a summary of previous discussions. Sometimes all these purposes will be present within a single discussion. Whatever the purposes, the discussion that is free and experimental most effectively promotes conceptual learning. It permits students to express themselves with a great deal of freedom. It requires them to formulate and test hypotheses. It requires them to move toward some kind of answer, but the answer is not predetermined.

The recitation, on the other hand, always has an answer key. There is always a predetermined answer in the form of a motor response toward which the recitation is intended to move. The motor response may be something which the teacher is trying to show the student how to do. It may be the shaping of an attitude. It may be the learning of a 'right' answer such as: 'corporations have the advantage of limited liability'. The recitation often rests upon the assumption that the instructor, or some other authority, has gathered all the significant data and tested all the important hypotheses.

The operational difference, then, between a discussion and a recitation is the presence or absence of answers that are predetermined and preferred. In a discussion any opinion is just as good as any other in advance of scientific examination. An opinion becomes bet-
ter or worse than others as it is subjected to the pro-
ceess of evidential testing.

In the recitation the student has but one problem--
if he chooses to take the recitation seriously. It is
the problem of remembering or guessing what the teacher
wants. The student may hypothesize about the needs of
the teacher. The student may say to himself; 'if I give
this answer, then the teacher will nod with approval and
I shall be that much closer to passing his course'. This
hypothesis may be tested by offering the answer and then
seeing whether the teacher finds it good. If the teacher
considers 'good' those answers which come from the assign-
ed readings, the recitation is at least a fair one from
the student's point of view. An unfair recitation from
the student's point of view is one for which the book
answers fail to satisfy the instructor. The really satis-
fying answers are beyond the student's ken in the private
world of the teacher. The fact that some testing of hy-
potheses may occur within the recitation makes this method
slightly consistent with the theory of conceptual learning,
but the usefulness of the recitation is limited by the
type of problem involved.

For the sake of further clarity it should not be
overlooked that the recitation, as it has been defined,
does not preclude the attempt to handle controversial
issues. In fact, it is characteristic of much college
instruction that controversial issues are handled on the recitation level. In a recitation that has as its central concern a controversial issue, one point of view is honored more than another. What point of view has this honored status need not depend upon the evidence which is offered to support it or refute it. Handling an issue in this way has the effect of taking controversy out of the issue so that it no longer has the quality of an issue. It also has the effect of promoting perceptual learning— if any learning at all.

Learning of any kind may reduce controversy within a group. If it is conceptual learning, it is almost certain to reduce controversy within the thinking of any one student, at least on the issue under scrutiny. However, the arbitrary removal of controversy from an issue can not possibly result in conceptual learning. Because conceptual learning reduces controversy, it does not follow that reducing controversy promotes conceptual learning.

A discussion differs from a recitation in that it opens up controversy for the purpose of promoting conceptual learning, not for the purpose of slipping over a motor response. An issue that is truly controversial presents the student with the opportunity to think and thus to employ concepts, because of the conflicts inherent in the issue. If students disagree over the economic effects of a high tariff, the opportunity for experimental
investigation is present. From such investigation may come a revised concept of the tariff. The doubt which is essential to the motivation of experimental investigation may get its origin in the kind of free discussion which gets diverse views into the open.

Controversy may also arise from the inconsistencies within the thinking of one student. The person who argues that the tax rate on high incomes should be lowered in order to encourage private capital investments may be inconsistent when he opposes the taxation of income derived from state and municipal bonds. The inconsistency may not be apparent to him except as it is identified within a discussion. When he becomes aware of the conflict he has a problem which may be solved best by clarifying his values. His valuing of private capital investments may be in conflict with his valuing of states' rights. It seems to the writer that the discussion is better than the recitation or the lecture for the identification of a controversy such as this. A good lecturer, one who knew the culture well, might make some highly accurate guesses as to the inconsistencies of his students and thus serve the cause of conceptual learning very well; but the good discussion makes guessing less necessary.

Inconsistency may be found in the documents of the past and present. Many of these documents may be studied in the social sciences. In 1900, for example, the Repub-
The Republican party stated in its platform that it was in favor of a tariff for revenue which would protect domestic industries from foreign competition. The person who is possessed of conceptual learning can see through this statement of political purpose quite easily. By employing concepts he is able to say to himself that a tariff which collects revenue can never exclude foreign-made goods from the domestic market. He can go on to say that a tariff bill which collects revenue on some commodities can exclude other commodities from the domestic market but it obviously cannot exclude the commodities on which it collects revenue. In other words, the use of concepts enables him to make a distinction between a tariff act and a tariff policy which would not be made by a political party that seeks to make statements pleasing to everyone.

The foregoing analysis could be made for the student in the course of a lecture. However, the making of such an analysis by the instructor does not produce the same educational result as the discussion which encourages students to make analyses for themselves. If the instructor wishes his students to become keen analysts, he must help them to develop and employ concepts within the problem-solving process.

This much can be said for the lecture. If the instructor makes an accurate surmise of what his students already 'know' in the shape of beliefs, values,
and concepts, he may succeed somewhat in clarifying values. Surely the lecture which is addressed to the dominant preconceptions of this culture runs a good chance of stimulating the kind of thinking which contributes to the achievement of conceptual learning. The same may be said for any good book, movie, or radio program.

What the lecture can not do is to permit the instructor to participate directly and purposely inside the thinking of his students. He is to some extent cut off from understanding the students he is trying to teach. He may become somewhat informed on what is happening to his students as he reads their term papers; but much of the content in these papers may be perceptive in quality. Moreover, the lecture that is supplemented with the term paper fails to make students acquainted with each others’ thinking, unless they read each others’ papers. They do not have the chance to share ideas, which is a process that often contributes to conceptual learning.

The lecture gives the students no guided experiences in the formulation and testing of hypotheses. If the student does any experimenting with ideas as a result of the lectures he has heard, it takes place in private, so that the student does not have the benefit
of the on-the-spot observations of others. That students sometimes feel the need for the discussion of ideas presented in the classroom may be inferred from the prevalence of the 'bull session'. The student who does most of his thinking in private does not have many chances for discovering his own inconsistencies. Under the lecture system one may learn conceptually—by chance—but the discussion experience seems more promising.

There was a time when the dominant theory of learning rested entirely upon the assumptions of faculty psychology. According to this school of thought, the mind was an entity possessed of certain faculties. These faculties were said to improve with use; the use of the faculty of reason improved one's ability to think. If the assumption of mind as an entity possessed of faculties were warranted, the lecture which stimulated thought would be a sufficient method for the improvement of thinking. At the present time almost no educator considers the assumptions of faculty psychology to be warranted, although much teaching at present seems to need them as justification.

The philosophy of pragmatism conceives mind as a capacity or function of the total organism rather than as an entity. Sometimes the mind is defined as the function of the total organism rather than as an entity. Sometimes the mind is defined as the function of finding
and testing meanings. This makes mind and thinking equivalent terms, as is apparent in the following statement by Dewey:

"The net conclusion is that acting with an aim is all one with acting intelligently. To foresee a terminus of an act is to have a basis upon which to observe, to select, and to order objects and their capacities. To do these things means to have a mind—for mind is precisely intentional purposeful activity controlled by perception of facts and their relationship to one another. To have a mind to do a thing is to foresee a future possibility; it is to have a plan for its accomplishment; it is to note the means which make the plan capable of execution and the obstructions in the way,—or, if it is really a mind to do the thing and not a vague aspiration—it is to have a plan which takes account of resources and difficulties. Mind is the capacity to refer present conditions to future results, and future consequences to present conditions...." \(^{(1)}\)

If one starts from the pragmatic conception of mind as the capacity of the organism which relates present activity to future consequences, it seems to follow that improvement in the ability to think about a particular issue will be aided by an educational process which helps students to become conscious of their thinking errors. As students attempt to solve problems, to clarify their values, to ground their beliefs, they may through discussion become aware of the quality of their thinking.

The belief that discussion as a method is regularly more consistent with the promotion of conceptual learning than the usual alternative methods is not accepted.

\(^{(1)}\) Dewey, John Democracy and Education N. Y. Macmillan Company, 1939, p. 120
by most educators; and this may be partly because few educators attach great importance to the distinction between perceptual and conceptual learning. This theoretical difference has now been explored, and some of the possible implications for method have been explored also. This study will not attempt to 'prove' that discussion is the most appropriate method for those who wish to emphasize conceptual learning in the social sciences. This kind of proof could result only from many different instructors' trying many different methods in many different carefully controlled situations and then comparing the results achieved. However, this study will take an exploratory step in examining for a relationship between the use of discussion and the clarification of attitudes among some students at an experimental college, called Goddard College. Goddard College is a college that emphasizes the discussion method, among other things, and it may be that students at this college achieve more in clarification than do students, say, at a typical midwestern state university. Finding that they did would not prove that the discussion was better than the recitation or the lecture for the achievement of conceptual learning, but the attempt to find out whether there may be such a relationship may suggest hypotheses pointing toward further inquiry.

There is a further value in exploratory study
such as this one, a value which this study can only help in a small way to implement. The processes by which one teaches have not been identified to any great extent. In practice one finds that teaching itself has not been defined in any careful way. There is a tradition in education that says that this must always be so. According to this tradition, teaching is not only a mysterious art, but it is also an incommunicable art.

Despite the distressing kernel of truth in this tradition, the belief that teaching can be taught is with us in an institutional form. The effort to train teachers can become more professional in results if the mysticism in our attitude toward teaching can be reduced. The definition of teaching in an operational way is necessary before one can take steps toward determining the presence or absence of teaching in any situation, and the definition is also essential to clarity in the attempts to train teachers. A beginning has been made already in this study by distinguishing between perceptual and conceptual learning. One may define teaching in terms of the operations by which perceptual and conceptual learning are advanced. A further step toward the achievement of an operational definition of teaching may be achieved by looking for relationships between the use of certain methods and the achievement of certain educational purposes.
What relationships, if any, exist between the use of certain methods and the achievement of certain purposes? Methods of teaching surely exist as the means toward something. If educators look upon different methods as alternative ways by which to achieve an educational end, they may be able to say eventually, with due allowance for differences in the habits, capacities, and temperaments of individual teachers, that a given method is on the whole a better road toward a particular educational result.

Such an approach to the training of teachers assumes that any method can be taught to any teacher who wants to learn the method. The teacher may not use the method he is taught, and he may cherish educational ends which do not conform with the methods he has learned. Such a teacher may use his methods for inappropriate ends; nevertheless, it will not be possible for the training of teachers to include methods that are appropriate to a teacher's purposes until educators know more about the relationships that may exist between ends and means. When knowledge of this kind is available to educators, it will be possible for them to answer in part the question: 'Given this educational philosophy, what methods will implement its goals?'

The purposes of the teacher are important but they do not generate the techniques for achieving them. The training of teachers must include both the clarification
of purposes and the development of techniques for implementing the purposes.

In the training of those who are to teach the social science it would be helpful to know what some of the good methods are for clarifying attitudes, for helping students to ground their beliefs and to improve their thinking. The purpose of this study is to explore some of the values of a free and experimental discussion as a method for clarifying attitudes among college freshmen who are studying economics. The general hypothesis is that discussion is more closely related to the achievement of such a purpose than is the lecture or the recitation.

No attempt will be made to examine the effectiveness of discussion as a method of teaching in the elementary or secondary schools. Neither will there be an examination of the discussion as a method for achieving goals other than the clarification of attitudes. The study will be confined to the use of the discussion method for the purpose of clarification among college freshmen in economics at Goddard College.

Since the experimental group in this study consists of students at Goddard College, the next chapter will compare and contrast Goddard College with the more typical college. Goddard College has many characteristics which make it different from Ohio State University, the college from which the students in the control group were drawn.
CHAPTER III

THE LEARNING ENVIRONMENT AT GODDARD COLLEGE

During the academic year 1946-47 the writer taught the social studies at Goddard College in Plainfield, Vermont. The writer tried to find out whether his students achieved more in clarification of attitudes than did a similar group of students at Ohio State University. Growth in consistency of attitudes was taken as evidence for growth in clarification of attitudes.

Evidence on the attitudes of the students at Goddard College and at Ohio State University was obtained from the administration of the Scale of Beliefs 4:21 and 4:31. This instrument was developed by the evaluation staff of the Eight Year Study. It has been studied for its validity and reliability by Paul R. Grim who has reported his conclusions in a dissertation written at Ohio State University in 1939.

The Scale of Beliefs was given to sixty freshmen students at Ohio State University who were enrolled in Education 407 during the winter quarter of 1946. These students took the test at the beginning of the quarter and again nine weeks later. These students, with their pre-test and post-test results, constitute the control group in this study.

The same Scale of Beliefs was taken by forty-four
Suspected, No Page 71
students at Goddard College who had instruction with the writer in one or both of the semesters of the academic year 1946-47. The students took the test at the beginning of a semester and again nine weeks later. These forty four students at Goddard College constitute the experimental group in this study. Pre-test and post-test results are available for these students also.

It was assumed from the beginning of the study that nine weeks was a long enough period to permit significant growth in consistency of attitudes. The data that will be reported and interpreted in a later chapter shows that this was a reasonable assumption for both the control and the experimental groups.

The writer also sought evidence on the respective ability to think in the two groups. Generally speaking, the greater the ability to think the greater the capacity to conceptualize. Evidence on the ability to think was obtained from both the control and experimental groups from the administration of two forms of the Nature of Proof Test. The forty four students at Goddard College took the Nature of Proof Test, No. 6 at the beginning of a semester. The same students took the Nature of Proof Test, No. 1 nine weeks later.

The Nature of Proof Test, No. 6 was also given to forty two of the sixty students in the control group at Ohio State University at the beginning of the winter quar-
ter of 1946. Nine weeks later these same students took the Nature of Proof Test, No. 1. The other eighteen students in the control group took the Nature of Proof Test, No. 1 at the beginning of the quarter and they took the Nature of Proof Test, No. 6 nine weeks later. The order in which the two forms of the Nature of Proof was administered was reversed for some of the students because it was suspected that one form was easier. This proved to be the case; No. 6 was found to be more difficult than No. 1.

A comparison of the mean score of the experimental group on the Nature of Proof Test, No. 6 with the mean score of the control group on the same test indicated that the two groups were on the average significantly different in the ability to think from the very beginning of the study. The experimental group was on the average significantly better in the ability to think. Because this is so no attempt is made to test the hypothesis that the students at Goddard grew more in the ability to think than did the students at Ohio State University. It is assumed that the initial difference in the ability to think would make it difficult, if not impossible, to test such an hypothesis. This initial difference, however, will have to be taken into account as the two groups are compared in their growth of clarity in attitudes.

The hypothesis with which this study is chiefly com-
The forty-four students at Goddard College achieved significantly more growth in consistency of attitudes than did the sixty students at Ohio State University and that this difference in growth was related to the fact that the total educational program at Goddard College places a greater emphasis upon the discussion method and the sharing of ideas than does the total educational program at Ohio State University.

The Scale of Beliefs 4:21 and 4:31 was not given to any of the students at Goddard College who were not in classes taught by the writer. It is not the purpose of this study to test the hypothesis that the methods of the writer are more closely related to growth in consistency of attitudes than the other methods used by instructors at Goddard College. It will be assumed that the methods of the writer are more like those commonly used at Goddard College than like those commonly used at Ohio State University.

If the students at Goddard College who are in the experimental group are more consistent in their attitudes than the students at Ohio State University who are in the control group, and particularly if this difference appears on the post-test and not on the pre-test, then this difference may be due to a difference in the methods emphasized at the two institutions.
There are many differences between the two institutions some of which may result in a difference in the kind of learning achieved at each school. Some of the differences are apparent to the casual visitor. Goddard College is a small college, its total enrollment being in the neighborhood of 120 students. Ohio State University is one of the larger state universities with an enrollment in the neighborhood of 25,000 students. The university has better physical equipment. The library at Goddard College is small, and its classrooms are often dirty and unheated. The smallness of Goddard College along with its informality may be more conducive to conceptual learning than the mass education practices of Ohio State University. The inadequacy of the physical plant at Goddard College probably makes difficult the achievement of any kind of learning.

In addition to the differences in size of the student body and in the quality of the physical resources, there are other differences less apparent to the observer but possibly more pertinent to this study. A brief list of some of these differences follows:

1.) There are no required courses in the curriculum at Goddard College which is not true of the curriculum at Ohio State University.

2.) There is a counsellor for every student at Goddard College and each student has a scheduled conference with his counsellor each week of the semester.
At Ohio State University students see their advisors infrequently, if at all.

3. The classes at Goddard College are small. The average class size at Goddard College is ten. At Ohio State University the average class size is much greater than this.

4. The group method of teaching that is emphasized at Goddard College is discussion while the group method emphasized at Ohio State University is the lecture-recitation.

5. Textbooks are rarely used at Goddard College. At Ohio State University the textbooks constitute one of the most revered sources of truth. This is particularly true for the undergraduate program.

6. No grades are given to students at Goddard College. No course credits are accumulated by the students at Goddard College. Such is not the case at Ohio State University.

7. Students at Goddard College evaluate their instructors and their recommendations are taken into account by the president of the college who possesses the hiring and firing authority at the college. At Ohio State University students certainly evaluate their instructors but this evaluation is usually unofficial and unsought for.

8. There is a daily and weekly work program involving the physical maintenance of Goddard College in which students and faculty are required to participate. At Ohio State University a group of people are specially hired for such duties and many a professor or student would feel that there was something wrong with the class structure if a janitor made more money than the professor.

9. There is a community government at Goddard College rather than a student government such as Ohio State University has.

10. Between semesters students at Goddard College participate in a winter work program similar to that carried on at Antioch College and at Bennington College.

11. Teaching in the senior division of Goddard College is largely on a tutorial basis and the students are expected to carry on independent research which cul-
minates in the writing of a thesis. At Ohio State University students during the last two years of the program continue to do the same character of undergraduate work that they did during the first two years.

Each of these differences will now be discussed in terms of its possible significance for conceptual learning.

**THE ELECTIVE SYSTEM AT GODDARD COLLEGE**

There are no required courses at Goddard College. A student may take as many as three courses a semester. He may take fewer than three courses but no more. If he takes fewer than three courses, he is expected to work more intensively in the ones that he does take.

Aside from this quantitative limitation a student’s choice is limited only by the curricular offerings. Even the curricular offerings may be changed by student opinion if enough students ask for the same thing and if there is someone on the staff qualified to meet the demand. It is unusual for the college to offer a course to fewer than five students.

The student at Goddard College chooses his program of study during the first week of the semester with the help of his counselor. The procedure for registration requires the student to see his counselor on the first day of the semester. At this first meeting the student and his counselor discuss possible courses of study. The counselor’s role is supposed to be largely one of helping the student to find out what he wants. After
Suspected, No Page 78
several courses have been listed as possibilities, and usually more than three are listed, the student arranges an interview with the instructor for each of the courses in which he is interested. In each interview the student tries to find out as much about the course offering as he can in order that he may be in a better position to determine which courses he wants to register for.

After the student has completed his interviews he returns to his counsellor and the program of study is discussed further. Together the student and counsellor decide on a program of study, consisting usually of three courses. The counsellor is not supposed to give advice or to make decisions for the student in any way whatsoever. Rather he is supposed to help the student clarify his plans and to help him make use of the information which he has acquired from his interviews with the other instructors.

The student is supposed to make his own choices and to take the consequences of his choices. One of the cardinal principles at Goddard College is the belief that students learn from undergoing consequences, particularly the consequences of their own creation. Ideally speaking, the counsellor is not supposed to take the responsibility for creating the 'right' consequences. His responsibility is supposed to extend no further than his attempts to help a student anticipate the consequences of a choice.
In practice, counselling often fails to achieve the ideal. Some of the students want to be told what courses to take and sometimes a counsellor is not reluctant to tell a student what choices to make. Those students who do not want the labor of anticipating consequences are often eager to get the business of registration finished as soon as possible. Sometimes a counsellor will force or manipulate choices from students who are eager to do some thinking about their program of study. These departures from the ideal are exceptional, however, and most students are free to choose their own program of study and they do so after a free discussion of the curricular opportunities that are available.

This freedom from required courses is consistent with any attempt to promote conceptual learning. A student who is free to choose his course of study is more likely to have the attitude that the school is trying to help him achieve clarity than is the student who is told what he should take. In other words, Goddard College demonstrates that it values planning to the extent of carrying it on with students in respect to such a simple matter as registration. Students at such a college may come to value planning more than students at a college where planning is merely talked about as a nice thing. Moreover, the kind of counselling that may occur at Goddard College on registration day is consistent with
any attempt to achieve conceptual learning through clarification of what the student wants.

It should be said, however, that the required course may be taught in such a way as to promote conceptual learning. The fact that a course is required of a student is obviously not an insurmountable obstacle in the way of conceptual learning. More important than the presence or absence of required courses is the kind of counselling that accompanies an elective system. It is the writer's opinion, also, that the kind of teaching which emphasized conceptual learning would assume many of the functions of counselling.

COUNSELLING AT GODDARD COLLEGE

Every member of the teaching staff at Goddard College is required to participate in the counselling program as a counsellor. Some of the administrative officers also have counselling duties. Each counsellor has a maximum of eight counsellees. The college favors the practice of each counsellor's seeing each of his counsellees for an hour each week of the semester.

When the student makes out his program-of-study card, he also schedules a counselling period with his counsellor. This means that his plan for the semester includes his planning to see his counsellor at the same hour of the same day each week of the semester.

A student may use the full hour or less than the full hour each week. The termination of the conference
before the hour is up is the responsibility of the student. Sometimes a student will indicate at the beginning of the counselling period that he has no problems which he wishes to discuss. In such a case he leaves immediately unless the counsellor keeps him longer through the use of questions or other devices.

Are students required to see their counsellors once a week for as long as an hour? Much of what has been said so far would indicate that they were not. The critical word in the question is 'required.' In one sense they are not required. If a student meets his appointment he is not counted as absent from counselling. This is true even though he stays but for a moment. Students are counted as absent from counselling only if they do not appear at all. However, the college values counselling so highly that most students feel better about their status in the college if they use the full hour each week. The college tends to look with disfavor upon the student who does not 'accept' the counselling program. Students who miss counselling frequently or who fail to show a need for an hour's counselling a week may find that this counts against them at such times as end-of-year promotions, or when they apply for admission to the senior division of the college. There is no doubt that many students feel more secure if they humor their counsellors with weekly visits. Informal pressure of this kind is quite effective in a
85.

community as small and self-contained as Goddard College.

Many of the counselling periods which the writer experienced consisted of small talk. Other counsellors reported the same experience. The counsellor often had no problems which he wished to discuss with his counsellor. Instead of saying so, the student often made use of the 'required' time by resorting to small talk. One student was very frank when he said toward the middle of an hour that he was 'all talked out.'

It was recognized by almost all the counsellors that a certain amount of small talk is a part of the getting-acquainted process that often precedes real counselling. But many of the counsellors felt that the counselling periods never went beyond the stage of talking about the weather. Although the counselling system at Goddard College was one of the deeply prized values of those who founded the college, it was, in the opinion of the writer, highly ineffective in practice. It is very doubtful that it contributed much to the learning of the student.

Counselling is a promising approach to conceptual learning, but at Goddard College it often failed to achieve its purposes partly because of the inexperience of those who had counselling duties and partly because of the system of counselling itself. In defense of the system it should be said that in most American colleges the student
does not have frequent chances to sit down and to chat with members of the college faculty. At Goddard College students have to do this whether they want to or not. This may or may not be better than the laissez-faire policy of most colleges. This is one of the uncontrolled factors in this study; that is why so much space has been given to a description of counselling at Goddard College.

CLASS SIZE AT GODDARD COLLEGE

The pupil-teacher ratio at Goddard College is seven. During the year 1946-47 the writer never had more than twenty-two students in a class. His smallest class had three students. He also had several individual conferences a week with students in the senior division of the college.

During the first semester at Goddard College, the writer had forty-two students distributed as follows over four courses:

1.) Growth of Democracy A.................22 students
2.) Growth of Democracy B..................9 students
3.) Economic Organizations............... 9 students
4.) Senior College Economics............ 3 students

During the second semester at Goddard College the writer had thirty-nine students distributed over four courses as follows:

1.) America Since 1920...................3 students
2.) Basic Economic Problems A...........17 students
3.) Basic Economic Problems B...........12 students
4.) Senior College Economics............3 students
This was a typical load for an instructor at Goddard College. The average class size is very much below that typical at most American colleges. It is certainly far below that at Ohio State University. The smallness of the classes could be conducive to conceptual learning, since it would enable an instructor to learn more about the interests and problems of his students. However, the writer has been a member of some very small classes in which the learning emphasized was largely perceptual. On the other hand, a very large class can make discussion an impracticable method and thus conceptual learning is blocked to the extent that it depends upon discussion. The smallness of the classes at Goddard College assures the absence of such a possibility. Whenever discussion is not used at Goddard it can not be attributed to class size. In practice, one finds that each student at Goddard has many opportunities to express himself and this, too, enhances the chances of conceptual learning provided that the teacher has the intent to work toward conceptualization and provided that such a teacher knows what to do with the expressions of a student.

Curricular Materials at Goddard College

It is very rare for a course at Goddard College to be taught from a textbook. The general tendency is to avoid dependence upon one book. Textbooks are regarded
as dull and unchallenging. Such books are used only occasionally as reference volumes.

This attempt to avoid dependence upon one book was not always practicable because the library had no more than 4,000 books in it. Many of these books were in the social studies, and there was a real shortage of books in the fields of science, literature, and psychology.

Some of the classes purchased books with money raised from students in the classes. The students in classes taught by the writer paid a book fee of five dollars when they enrolled in the class. With this money, five copies each of the following books were purchased for use in the course, Basic Economic Problems:

1. Hayes, H. Gordon Spending, Saving, and Employment
2. Haslitt, Henry Economics In One Lesson
3. Dollard, John Frustration and Aggression
4. Dewey, John How We Think
5. Thouless, Robert How To Think Straight
6. Sternberg, Fritz The Coming Crisis
7. Calverton, V. F. The Making Of Society
8. Dunham, Barrows Man Against Myth
11. Finer, Herman The Road To Reaction
13. Hayek, F. The Road To Serfdom

The number and type of books chosen is typical for a semester of work at Goddard College. They represent books which draw upon related areas. No book on the list is entirely economic in its content. While many of the
books express unorthodox views the student who read all
the books could not believe everything that he read if
he wished to avoid inconsistency. The content of Dillard's
book, for example, is somewhat in conflict with the con-
tent of Dewey's book. According to Dillard, a problem-sit-
uation is frustrating in its consequences; while Dewey
describes such a situation as one within which thought
may occur. If Dewey is basically correct in his position,
a conflict such as this one presents the student with op-
portunity to do some thinking. Some of the conflicts be-
tween Hayes and Hazlitt and between Finer and Hayek are
considerably sharper than the one between Dillard and
Dewey, which could perhaps be reconciled by careful defi-
nition of terms. The presentation of conflicts is
promising for the achievement of conceptual learning pro-
vided that the conflicts are handled reflectively by the
student.

Some of the conceptual learning at Goddard College
might be attributed to the use of books with conflicting
views. On the other hand, it should be recognized that
the use of one book rather than many, even when the one
book is a textbook, need not be a barrier to conceptual
learning, since it is often possible to find conflicts
or inconsistencies within a given textbook which would
present the student with reflective opportunities.
EVALUATION AT GODDARD COLLEGE

Goddard College has departed from the traditional practices of giving grades and course credits to college students. In the file of each student one finds a list of courses taken by the student each semester. For each course taken there is a report on the student written by the instructor. In his report the instructor makes comments about the student’s attendance, tardiness, quality and amount of written work, quality and amount of participation in class discussion, work habits, attitudes, thinking, and social adjustment. The instructors are expected to avoid such general comments as good, fair, or excellent work. They are not expected to avoid value judgment but they are expected to illustrate what they say.

These reports say more about a student than does a letter grade. However, the report can have the same effect upon the learning and the motivation of a student as a letter grade would. For example, the student who feels that he wins the recognition and approval of an instructor whenever he expresses a liberal attitude on a given social issue may be motivated in such a way as to achieve learning of the perceptual kind. The student who feels that he is being evaluated for the quality of his thinking rather than its content or conclusions will be motivated differently, and one may more logically expect conceptual learning as an outcome. At Goddard College the
reports of instructors were often used in the same way that letter grades are used at most schools. The student who received many unfavorable reports from his instructor was likely to be asked not to return to the campus on the following semester. More often than not the reports were used against the student rather than for guidance purposes. The writer does not believe that the absence of grades at Goddard was a factor in promoting conceptual learning, in view of the facts that the student had to secure the approval of the instructor and that this approval was sometimes based upon the extent to which the student had achieved certain 'perceptions.'

In addition to reports written by the instructor, each student writes an evaluation of himself for each of his courses. He tries to summarize his own learning experiences. This kind of self-evaluation can result in some conceptual learning provided that the experience is not regarded by the student as a sheer assignment and provided also that the self-evaluations are discussed reflectively by the student and his counsellor. These reports were seldom discussed, and there can be no doubt that some students regarded them as tasks to be handled as casually as possible. The feeling among many of the students was that such a report was something one did in order to complete a semester.

If the student at Goddard College wishes to eval-
uate his instruction rather than the quality of his learning, he is supposed to address his comments to the Education Policies Committee. This is a student committee elected by the voters in the college committee. The voters consist of both students and faculty. The functions of the committee are:

1.) Warning students about their academic work, or about their attitudes toward the community, its government, its philosophy, or its work program.

2.) Recommending that certain students be dropped from the college for academic, social, or political reasons.

3.) Making recommendations on the hiring or re-hiring of faculty members.

4.) Making surveys of the instruction in the college and advising instructors on the improvement of their instruction.

These functions are entirely advisory. The faculty or the administration may or may not accept the recommendations, but they are always given careful consideration. It is probable that the experiences of students who serve on this committee contribute to their conceptual learning. This may happen whenever the objectivity of the committee is challenged as it was once during the year by an instructor and his class. The number of students affected by this uncontrolled factor would not exceed 5 per cent of those considered in this study.

Instructors may be more sensitive to what their students want as a result of this student evaluation,
and such sensitivity could enhance the chances for conceptual learning. Students who have been at Goddard for a long time have learned to like the discussion method, so that the new instructor who expressed a preference for the lecture might come under the surveillance of the Education Policies Committee.

In addition to the required reports for each course and the optional report on instruction, the student is required to write: (a) an evaluation of his counseling experiences and (b) a general evaluation of himself as a community member. These reports are summarizing experiences which, like his other reports, may or may not be reflective in character.

Finally, the student's file will contain the counsellor's report of his counseling experiences with the student. The counsellor may refer to the problems that were discussed, the progress or lack of progress made on each problem, the attitudes of the student toward his courses, his work program, the community government, and the extent to which the student participated in other activities of the community life. It is up to the counsellor what he puts into the report and what he treats as confidential; the report becomes a part of the student's permanent record.

THE WORK PROGRAM AT GODDARD COLLEGE

The report which the student writes about himself
as a community member is a requirement which reflects the interest of the college founders in the non-academic aspects of student living. Most of the student's time is worked and lived within the college community. The college is situated on the edge of a Vermont village and the members of the community have few contacts off the college grounds. This is partly due to the difficulty of travel during the Vermont winter. It is also due partly to the lack of good feeling between the town and the college. Many of the conservative Vermonters regard the college and its experiments as communist.

A part of the time spent on the college grounds is devoted to a daily and weekly work program. Both students and faculty are required to participate in this program. This program represents an attempt to avoid the creation of a leisure class at the college. The unpleasant tasks are not left to those who have to work their way through college. Everyone at Goddard College is expected to work his way. A student is not admitted to the college unless he agrees to participate in the work program. Students and faculty wait on tables, do the dishes, mow the lawns, prune the trees and bushes; repair the roads, and do many other things essential to the maintenance of the college. This policy enables the college to avoid the hiring of labor which would increase the tuition costs of everyone. It also makes possible the granting of tuition reductions
to those students who demonstrate a need for financial assistance.

The tuition and board at Goddard College for the year 1946-47 was $1100. Those students who felt that they could not afford this sum could apply for a reduction in their tuition. Any tuition reduction which the college grants are treated as confidential. The student who reveals to another that he has received a tuition reduction loses his scholarship. The college pursues this policy as a part of its general attempt to avoid class distinctions between those who pay the full tuition and those who do not.

THE COMMUNITY GOVERNMENT AT GODDARD COLLEGE

Besides being required to participate in the daily and weekly work program the students are encouraged to take part in the community government. Each member of the community, whether he be student or faculty member, is free to vote and to hold office. Each member is required to pay a community tax and the money collected in this way is used for the financing of recreational activities. Those who are delinquent in taxes may not vote in the community meeting but they may vote in the community elections.

The attempt is made to avoid student government. It is believed by many of those at Goddard College that the purely student government has always in the past
been concerned with trivial matters or has always been subject to some kind of adult veto. At Goddard College students and faculty members are supposed to participate in the government as equals. There is no faculty veto of a decision made by the community government. A faculty bloc within the community government would be ineffective and it would be resented by the students. In practice the faculty is as disunited on an issue as the students. There are sometimes faculty blocs but almost never a faculty bloc.

The community holds a meeting twice a month under the constitution adopted at the last meeting of the year 1946-47. At the community meeting the members of the community discuss and vote upon issues, hear committee reports, make recommendations, elect special committees, ratify decisions of the community council, amend the constitution, assess taxes, and question community officers about the conduct of their business.

During the year that the writer taught at the college, the community meetings were poorly attended. It was unusual for more than one-fifth of the community to attend a meeting. One of the widely discussed problems of the year was how to increase attendance at the community meetings. A related problem involved changes in the community constitution. Some members of the community felt that some of the poor attendance at com-
community meetings was due to certain features of the constitution. These people felt that the constitution did not permit the community government to concern itself with certain important matters that fell within the province of the faculty or the administration. Because of this feeling a new constitution was adopted toward the end of the year in a series of meetings attended by only a few of the community members. This new constitution did not change greatly the powers of the community government. The new constitution was written by a student in the senior division of the college who was writing his thesis on student governments in American colleges. The student was a counsellor of the president of the college.

Although there is no faculty veto of the community government, there are areas of sovereignty which do not belong to the community. The faculty holds weekly meetings at which matters were decided which affected the lives of the students at the college. These decisions are not subject to community ratification. In fact, the content of these meetings is not supposed to be shared with the students. At these meetings decisions are sometimes made such as asking a student not to return in the following semester, refusing to permit a student to enter the senior division of the college, voting end-of-year promotions, or approving a change in program for a student.
Whenever something came from the faculty meeting which affected the students adversely they felt sometimes that the community government was impotent where it ought to be strong. Such a feeling was related to the fact that the decisions of the faculty were not subject to community ratification although the faculty often took into consideration community recommendations.

There were also decisions coming from the administration which were not subject to community ratification. For example, during the first semester of the year 1946-47 some students petitioned the administration for a registered nurse to work in the college infirmary. This request was granted but it was accompanied by the announcement that the student health fee had been increased in order to pay the salary of the nurse. This decision to increase the student health fee was purely administrative in its origin since it was never discussed or ratified at either a faculty or community meeting. Another example of the same kind of thing occurred toward the end of the semester when the administration announced that the tuition, room and board would cost $1450 in 1947-48 rather than $1100. This decision was explained in a community meeting but it was never discussed and voted upon as an issue.

The fact of three different sovereignties was confusing to many of the community members and a clarification of this problem could have contributed to the con-
ceptual learning of many of the students. No one was
sure as to what areas were covered exclusively by each
of the three governments. Some of the discontent and
lack of interest was no doubt related to the feeling
that the community government dealt with matters less
important than those handled by the faculty or the ad-
ministration. Theoretically, the community could have
enlarged its powers by amending the constitution but,
again, the confusion was such that very few knew what
he wanted.

Many of the students had direct experience in
problems of government that could have promoted their
conceptual learning. The majority of the students were
not interested in the community government, however, and
it is the writer's opinion that any difference between
the experimental and control groups in this study can
not be attributed to the presence of community govern-
ment at Goddard. The difference between government at
Goddard and government at Ohio State University is not
one which would make for a difference in the kind of
learning at each school.

THE WINTER WORK PROGRAM AT GODDARD COLLEGE

Between the semesters the students are required to
participate in the winter work program for two months.
This consists of work experience off the campus. The
students seek employment in government or private in-
industry. The college does not secure jobs for its students; this is a responsibility of the student. The student receives counselling on the problem of selecting and finding a job and it is hoped that everyone will find a job that is related to some of the interests that every one reflects in his curricular choices.

At the end of his winter work period each student writes a paper evaluating his work experiences. This paper is placed in the student's file along with an evaluation written by his employer. Students are not visited on the job by members of the college faculty and the written reports of the student and his employer constitute the only records for the winter work experience.

The kind of direct experience provided by the winter work program could promote the conceptual learning of the student if the experiences were subjected to reflective examination by the student under the guidance of the counsellor or instructors. This happens sometimes as it did with the two students who worked with the National Labor Relations Board. These students found a relationship between some of their work experiences and the content of some of their courses in the history of labor problems. This kind of thing is exceptional, however, and the most that can be said sometimes of a student's work experience is that it enabled him to escape the worst part of the Vermont winter.
The problems raised by the winter work program at Goddard College are very similar to those raised by the Education 503 program at Ohio State University. The problems are seldom solved at either institution in such a way as to further the conceptual kind of learning.

THE JUNIOR AND SENIOR DIVISION OF THE COLLEGE PROGRAM

The junior division consists of the first four semesters at Goddard College. Upon graduation from the junior division, and sometimes before, a student may apply for admission to the senior division. The faculty may or may not approve the application which describes the student's plan of study for the next two years. Sometimes a student is admitted to the senior division even though he has not graduated from the junior division. Moreover, graduation from the junior division does not amount to admission to the senior division.

Whether an application is approved or not depends upon whether the faculty believes that the student is ready for the different kind of experience provided in the senior division. The students in the senior division do not experience very much group work. Their relationship to the faculty is largely a tutorial one. Usually a student in the senior division has a project or a problem upon which he is working. Such a student meets
frequently with his counsellor and other members of the faculty. The college seeks to promote independent research in its senior division and the research usually culminates in the writing of an acceptable thesis. A student usually takes four years to complete his work in the junior and senior division although it is not impossible for him to do it sooner. The college does not encourage its students to complete their studies in less than four years and this is as close as Goddard ever gets to course unit concept of education.

The kind of experience emphasized in the senior division is promising for the achievement of conceptual learning provided that the students are working on problems rather than projects, and provided that the problems are held by the students rather than by their counsellors. This does not mean that it is undesirable for a counsellor to identify himself with the problems of his students but it does mean that few students can be expected to identify themselves with the problems of their counsellors.

None of the students in the experimental group of this study were enrolled in the senior division. For this reason the experimental results cannot be explained by the kind of experiences typical of the senior division. The difference between the junior and senior divisions has been described because it helps to clarify for the
reader the educational philosophy held at Goddard College. Moreover, the kinds of experiences provided in the junior division are influenced somewhat by requirements of the senior division. Students in the senior division must be able to handle ideas reflectively and attempts are made in the junior division to develop this capacity.

THE GROUP DISCUSSION METHOD AT GODDARD COLLEGE

The founders of Goddard College placed a negative value upon the lecture method and they have to this day a 'snear opinion' of such institutions in the East as Harvard, Dartmouth, and Columbia. The methods used at Goddard College emphasize discussion, the consideration of issues, and the sharing of ideas. The college is intended to be a place where students learn to discuss 'hot' issues. It is believed that such discussion will produce the better thinking that is essential to good citizenship in a democracy. All the students in the experimental group experienced a year or more of the college's emphasis upon discussion.

The administration of the college tries to choose faculty members who prefer the discussion method and who know how to use the discussion method. A professor from a traditional university who preferred the traditional methods would find it difficult to secure a position at Goddard College even though he possessed a
national reputation in his field. Sometimes the college mistakenly hires an instructor who prefers to lecture or to hold recitations. Such instructors are seldom well received by the students who have developed a faith in the college's way of doing things.

Teachers who do not like discussion do not enjoy working at Goddard College since the total program places such a heavy emphasis upon frequent and lengthy discussion. A teacher who believes that discussion is a waste of time that culminates in the pooling of ignorance would find the faculty meetings quite intolerable. These meetings often last for hours and one must have a real faith in the values of discussion before one is able to put up with a four hour discussion of the philosophy of recreation.

The discussions in the classrooms are sometimes more free than experimental. Sometimes a student finds it possible to substitute comment for studied examination of an idea. The students have a great deal of enthusiasm and the college finds it easy to get expressions of opinion on almost any issue that is controversial. The expressions of opinion often continue long after the class period has ended. The college sometimes fails to be experimental when an instructor shows a greater tolerance for a liberal idea than for a conservative one. Nevertheless, many of the instructors are able to lead dis-
cussions in such a way that ideas are being tested. Students at Goddard College do have many opportunities to express ideas and to test those ideas with evidence. The writer believes that such opportunities are much more common at Goddard College than at Ohio State University. The writer has attended the latter institution since 1936 and it was very seldom that he had any experiences at all comparable to that which is usual at Goddard College. The next chapter will describe one unit in a course that the writer taught at Goddard College and this description will help to illustrate the typical classroom experiences at Goddard College. The reader will have to determine for himself whether these experiences are consistent with the theory of conceptual learning described earlier.

This completes the description of the setting within which the experimental data were collected. The differences are such as to suggest strongly that there is a great difference in the kind of learning with which each school is concerned. However, Goddard College has never made its learning theory explicit. When the college has referred to 'learning' in its official statements, no distinction has been drawn between perceptual and conceptual learning. Nevertheless, some of the practices of the college are consistent with a theory of conceptual learning. Other practices of the college could result in conceptual learning if the college staff was
consciously concerned with the achievement of such learning. The direct experiences of the students in community government and in the work program, for example, could result in conceptual learning if these experiences were intellectualized. The counselling at the college could be an aid to conceptual learning if it occurred under less rigid circumstances and if the counsellors were consciously aware of the differences between perceptual and conceptual learning and if they were more competent in the area of counselling.

Conceptual learning is most likely to occur in an environment where instructors have chosen consciously to work toward conceptualization. However, this does not exclude the possibility of instructors' using methods consistent with conceptual learning in the absence of any conscious concern over such learning. The writer believes that many of the practices at Goddard College are consistent with a theory of education which emphasizes conceptual learning. He believes that the chances for conceptual learning are on the whole somewhat better at Goddard than at the Ohio State University. At neither institution has a theory of conceptual learning been made articulate. But in some way Goddard College has put into practice some methods which are more promising for conceptual learning than the dominant methods at Ohio State University. At Goddard College the classes are smaller, discussion is
more frequent, the books read are often more challenging, the students have more freedom in their choice of courses, and the total atmosphere of the school is liberal in its educational emphasis.

Do the students in the experimental group achieve greater consistency in their social attitudes than the students in the control group? Can this greater consistency in attitudes be interpreted as the result of conceptual learning? These questions constitute the central concern of this study. An answer to them will help to determine whether the implied but not explicit learning aim of Goddard College is achieved. The answer should be of service to those who teach economics and the other social sciences. It should be of particular interest to those teachers of the social studies who wish to emphasize conceptual learning. Much can be learned from the successes and failures of Goddard College. Goddard College does seek at all times to underline the social implications of all subject matter. For this reason its experiment has a particular meaning for those who teach the social studies. Finally, it needs to be noted that, whatever the successes of Goddard College, an even greater success might be possible if the college possessed an articulate theory of conceptual learning.
CHAPTER IV

basic economic problems: an attempt at conceptual learning

The discussion which follows is a general description of a part of a course called Basic Economic Problems which the writer taught at Goddard College. The students in the course constitute a part of the experimental group in this study. The description is concerned with both methods and content, and any difference between the experimental and control groups in growth toward greater consistency of attitudes was probably caused partly by the experiences provided for in Basic Economic Problems. The writer believes that the methods and the content of this course are consistent with his theory of conceptual learning. He also believes that the course is illustrative of the kinds of experiences which the members of the experimental group had with other instructors at Goddard College. It is also true that Basic Economic Problems differs somewhat from other courses at Goddard College in that the writer was consciously concerned with conceptual learning, probably to a greater extent than other instructors at Goddard. However, the similarities are greater than the differences, and it is safe to say that Basic Economic Problems resembles other courses at Goddard more than it resembles most of the courses experienced by students in the control group.
The students were given opportunities to clarify some of their attitudes through the discussion of problems that were largely economic in nature. As these problems were discussed the writer tried to help the students become aware of the nature of a problem—situation. He also tried to raise to a conscious level their understanding of the thinking process. These purposes were held to be as important as the learning of economic concepts, as important as the understanding of a particular economic problem. In fact, it seemed essential to any attempt at conceptual learning that students learn the ingredients of a problem—the situation within which concepts may undergo reconstruction.

Early in the course the students read and discussed parts of John Dewey's How We Think, John Dollard's Frustration and Aggression, and Robert Thouless's How to Think Straight. The content of these three books was related to economics in general and to the unemployment problem in particular. For example, the unemployment problem was discussed in terms of the characteristics which made it a problem. It was learned that one of the characteristics of this problem was the presence of issues. Economists did not agree on solutions for unemployment. A given economist had no problem if he was convinced that his particular solution for unemployment
was the correct one. Unemployment was a problem only for the unemployed who were seeking employment, or for the economists who had not yet decided upon a solution for the problem.

It was discovered that Dewey and Dollard disagreed somewhat over the meaning of a problem. Both writers defined a problem as that situation which existed when a goal-response had been interrupted. Dollard said that such an interruption was frustrating to the individual. The individual would respond to such frustration by acting aggressively toward what he thought was the source of his frustration, or toward some displaced object, person, or institution. In economics, this would mean that a person frustrated by the interruption of his employment might direct his aggressiveness toward some minority group such as the Negroes or the Jews.

Dewey, on the other hand, regarded the interruption of a goal response as the opportunity for reflective thinking. The problem-situation presented man with an opportunity to be his most rational rather than his most irrational self. In economics, this would mean that a problem such as unemployment could be a stimulus for more scientific thinking about our social economic order.

It was discussed whether or not the positions held by Dewey and Dollard were basically different. It was
possible that both men were wrong. Was it also possible that both men were right? Or could only one of the men be right? In other words was there a basic issue in social psychology between Dewey and Dollard? Some students felt that thinking sometimes arose from a situation that was not doubtful in quality. Other students felt that aggressive behavior could sometimes be the consequence of reflective thinking. They did not believe that all aggression was caused by frustration. It was suggested by some of these students that our society tended to reward a certain amount of aggression and that such aggression might be regarded as the product of rationality.

The writer suggested to the group that a problem might be frustrating in its consequences if one could think of no hypothesis for tackling the problem. It might also be frustrating to find that none of one's hypotheses worked successfully. In either case one would feel that he had reached the end of his resources for tackling the problem. This might result in the frustration described by Dollard. In the case of unemployment a given individual might find it impossible, through his own resources, to secure a job for himself during an economic depression. This led into a discussion of the extent to which an individual possessed the resources for finding himself a sufficiently resum-
operative job. To what extent was an individual responsible for his own unemployment? Most of the students felt that unemployment was a problem that required group thinking and group action for its solution.

The writer also pointed out that Dollard placed a greater emphasis upon motivated behavior than did Dewey. It was possible, according to Dewey’s theory, for a problem to exist in the absence of clearly motivated behavior. For this reason many problems involved the question of what one wanted. This is what is sometimes meant by the phrase, ‘identification of a problem.’ In economics it is often necessary to determine what is meant by the unemployment problem before one can hypothesize about its solution.

A few of the students who were well grounded in psychology recognized in Dollard what they thought were Freudian assumptions. They wondered if Freudian psychology could be applied to the problem of explaining mass social phenomena such as anti-Semitism and fascism. One of the students who was vocationally interested in psychiatry suggested that Marx would be more useful than Freud. This suggested to some of the students the study of Marxian economics. The writer suggested that they compare Marx with John Dewey. Some of these students read John Dewey’s Liberalism and Social Action, Zalmen Slesinger’s Education and the Class Struggle, and the
III.

The **Communist Manifesto** by Marx and Engels. It was learned that Dewey attributed many of our problems to cultural lag, or to the fact that we had applied reflective thinking to our technology but not to our social institutions. The Marxists, on the other hand, attributed our problems to class oppression. Discussion was held on whether the hypothesis of cultural lag was more useful than the hypothesis of class struggle. The question was raised as to whether the two hypotheses were mutually exclusive. Did they represent alternative approaches to the job of social analysis? Could one explain cultural lag as the consequence of domination of one class over another? Did a Marxist such as Slesinger accept cultural lag as a fact? If he did, then what was the difference, if any, between him and John Dewey?

There seemed to be this basic difference between Slesinger and Dewey: in attacking the assumptions of liberal educators such as Dewey, Slesinger held that there was little hope that we would achieve fundamental social change through the more extensive use of reflection. He argued that the class in control of our culture would oppose reflective thinking whenever it was applied to an examination of our dominant institutions and values. Many of the students agreed that it was unlikely that the public schools would do much with reflective thinking in the social sciences. However, they were reluctant
to embrace Slesinger if it meant committing themselves to an attempt to change the social order through the use of revolutionary violence. They did not believe that the freedom to think reflectively was any greater in the Soviet Union than it was in capitalist America.

Aside from the question as to whether reflective thinking could be applied to social problems in a class-structured society, it was also asked by the writer whether such thinking could be used for socialized purposes in any kind of society. To what extent do all societies contain obstacles to the reflective examination of its basic institutions? It was also pointed out by the writer that some philosopher disagreed with Dewey over whether or not scientific thinking could be used in the solution of moral problems. These philosophers—and they are not Marxists—argue that science can tell us what is true but it can not tell us what is good. Science, they say, can tell us how to preserve foods but it can not tell us whether we should make divorces easier or more difficult to obtain.

Does the unemployment problem involve only questions of fact which can be settled scientifically? Does it also involve moral questions which may or may not be settled scientifically? What, for example, would be a good solution to the unemployment problem? Would any solution be good if it put people to work who wanted to work? Sup-
pose that it were possible to employ the unemployed by preparing for the possibility of war with Russia? Would this be a good solution? How would one determine that it was or was not good? Would reflective thinking help one to determine whether it was good or not?

Before pursuing these questions very far it became evident that the group saw no clear relationship between the problem of employing idle workers and the policy of preparing for war. The writer made reference to Kenneth Boulding's bathtub analogy which they had been assigned to read. Boulding compares our economy to a bathtub. The water running from the faucet represents consumption. If the water runs out the faucet faster than it goes down the drain, surpluses accumulate. We can remove these surpluses by turning off the faucet for a while—which has unemployment as a consequence. We can refuse to turn off the faucet and attempt to increase consumption. If we are unwilling or unable to do either of these we may hack a hole in the side of the tub. Boulding refers to war and preparation for war as the equivalent of hacking a hole in the side of the tub.

The students had also been assigned to read Robert Thouless and his reference to the use of analogy. It was pointed out that an analogy is used to illustrate an abstract concept. Our economic concepts are sometimes
quite abstract. The analogy has an illustrating function but this does not make it a source of truth. Boulding's bathtub analogy does not prove that there is a tendency in our economy for production to out run consumption. It does not prove that preparation for war puts people to work. It only illustrates one man's conception of the relationship between consumption and production, consumption and war, in our economy. In order to prove such a relationship it would be necessary for one to step outside the analogy. We do not expect an analogy to prove anything. An analogy is properly used when it is intended to illustrate. The difference between an example and an illustration is that example serves as a fact against which an idea may be tested.

After this attempt at clarification the writer again raised the question as to whether reflective thinking could be applied to such a question as: is preparation for war a good solution to an unemployment problem? The students were quite sure that it was not a good solution but they had no ideas as to how one would prove that such was the case. The writer decided to table this question for a while with the intention of returning to it later.

The students wanted to explore further the question of whether war and preparation for war would employ people who otherwise would be unemployed. They felt that they needed to know more economics before they could deal
with such a question at all adequately. The writer then suggested a study of two books—*Spending, Saving, and Employment* by H. Gordon Hayes and *Economics In One Lesson* by Henry Hazlitt. These two books were suggested deliberately because of the great difference in their basic assumptions. Because of this difference in assumptions the two writers reach quite different conclusions about the causes and solutions for unemployment. After reading and discussing both these writers the group listed the following differences or conflicts between Hazlitt and Hayes:

1. Scarcity of customers is the most critical problem in our society. (Hayes)

   Scarcity of capital is the most critical problem in our society. (Hazlitt)

2. Uninvested savings are inevitable in a private enterprise economy. (Hayes)

   Every saving is, in effect, an investment. (Hazlitt)

3. The hoarding of income is a rational kind of behavior for many persons even though it tends to promote unemployment as a consequence. (Hayes)

   The hoarding of income is pointless (except in a depression) and therefore it is either non-existent or it exists as the consequence rather than the cause of unemployment. (Hazlitt)
4.) The volume of national income saved is a function of the way in which income is distributed. (Hayes)

The volume of national income saved is a function of the interest rate. (Hazlitt)

5.) War, disaster, waste, calamity, and accidents create jobs. (Hayes)

War, disaster, waste, calamity, and accidents divert employment from one area of the economy to another. They do not create additional employment. (Hazlitt)

6.) There is a chronic shortage of buying power in our economy because of the income that is withheld from use. (Hayes)

Supply creates its own demand. (Say's Law)

There is no shortage of buying power since we produce only to enhance ultimate consumption. (Hazlitt)

7.) People with big incomes hoard increments to their income. (Hayes)

Increased income for big income receivers does not create a market impasse since such increases in income are quickly re-invested, invested in new industries, or used to enhance one's consumption. (Hazlitt)

8.) The act of saving income reduces the demand for goods, which in turn reduces the incentive to invest. (Hayes)

The incentive to invest is a function of how much income is saved rather than spent. (Hazlitt)
9.) Tariffs promote employment and stave off a market impasse to the extent that they produce a net export surplus. (Hayes)

Tariffs divert employment into uneconomical areas. They do not increase net employment. (Hazlitt)

10.) Governmental action is essential to the prevention of unemployment. It is particularly essential to recovery from economic depression since there are no purely economic factors during a depressed period that could cause recovery through self-regeneration. (Hayes)

Governmental attempts to supervise our economy causes more harm than good. Unemployment is largely due to the meddling of the government. The individual farmer, worker, banker, and entrepreneur know what is best for the economy. (Hazlitt)

These conflicts between Hayes and Hazlitt meant that neither of the theories could be entirely right unless the other one was entirely wrong. It was possible, of course, that there were elements of truth in both theories. It was also possible that both theories were entirely wrong. The writer attempted to avoid any suggestion that the students faced an either-or choice. He pointed out that a refutation of one of the theories did not force the acceptance of the other theory unless it was the only known alternative to the refuted theory.
The students were asked if the enumerated conflicts represented a problem to them in Dewey's sense of a problem. Were they able to make choices between the two theories? Did they have to choose between these two theories? Were they able to say whether they could reject both theories? Were they at all concerned over whether to accept or reject one or both of the theories? Would an attempt to test some of the statements made by Hayes and Hazlitt help them to determine whether war and preparation for war employed people who otherwise would be unemployed? What facts, if any, would help them to determine whether Hayes, or Hazlitt, or neither one was correct in his explanation of unemployment? These were some of the questions raised after the group had listed the issues between Hayes and Hazlitt.

One of the students, with the help of the instructor, discovered what seemed to be a basic difference between Hayes and Hazlitt which involved the question of sources of truth. Henry Hazlitt, it was discovered upon closer examination, made frequent use of analogy for the purpose of proving a contention. There was distressingly absent from Hazlitt's book any reference to data collected on our economy. Hazlitt tended to depend upon illustration and hidden assumptions for his
proof. Hayes, on the other hand, had much data in his book which dealt with such matters as the distribution of income, the volume of consumer credit, the size of our net export surplus, and the like. Hayes also made use of analogy and sometimes the analogy used implied proof rather than illustration. However, it was quite evident that the whole tone of Hayes's book was more scientific than Hazlitt's. This still did not mean that Hayes was right and Hazlitt wrong. It was possible for Hazlitt to be right even though he had failed to document his argument with economic data. On the other hand, Hazlitt could hardly be right if his theory failed to account for the facts reported by Hayes in his argument.

A further examination of the two books indicated that many of the differences went back to a difference in assumption. Hayes assumed that we almost never had full employment in our economy. He had some data which supported that assumption. Hazlitt assumed the presence of full employment in our economy except under very unusual circumstances. Which of these two assumptions was more reasonable in the light of any data we possessed about the economy? If Hazlitt's assumption was the more reasonable than there was no unemployment problem in the chronic sense of the word. The only kind of unemployment that we needed to worry about, if Hazlitt was correct, was the frictional kind that was bound to be present in
the most perfect of economic orders.

The writer suggested that the validity of these two assumptions might be examined by attempting to determine whether there was a market problem in our economy. We agreed that employment opportunities were related to the opportunity to sell goods. The failure to sell what was produced would result eventually in the curtailment of employment. A study of Income and Economic Progress by Harold G. Moulton gave the group some data on the distribution of income which helped to test the idea that there was a market problem. Moulton made the following statement and presented the following data:

"Among these factors, the character of the income distributed is of primary importance. This is because those with large incomes automatically save a greater percentage of the total than those with small incomes. The truth and significance of this general statement may be gauged from the following facts. Out of 15 billion dollars of individual savings in 1929, as much as 13 billions were made by 10 per cent of the population. The 2.5 per cent of the families having incomes in excess of $10,000 contributed two-thirds of the entire savings of American families; while the 59 per cent of the families having incomes under $2,000 saved only 1.6 per cent of the total. Sixty thousand families at the top of the income scale, with incomes in excess of $50,000 saved almost as much as 25,000,000 families having incomes less than $5,000.

"From this study of the relative amounts of savings made by various income groups we arrive at a general principle or law, which may be stated as follows: The greater the number of persons in the high income groups the larger the percentage of the aggregate national income that will be set aside for investment purposes."(1)

(1) Moulton, Harold G. Income and Economic Progress
Washington, National Home Library Foundation, 1936, pp.39-40
These data supported Hayes's contention that saving was a function of the way in which income was distributed. They did not refute Hazlitt's contention that savings were a function of the interest rate, since it was possible that the interest rate would rise or fall according to how much income was available for investment purposes. It seemed improbable, however, that the rate of saving would fall with a fall in the interest rate if the distribution of income continued to be highly unequal.

These data, moreover, did not prove that there was a market problem, since it was possible, as Hazlitt contended, that the income saved was quickly invested in new or old industries. If the total income of the economy was always equal to the total output of the economy then it seemed to follow that the act of saving would reduce the demand for the output and this would hardly constitute an incentive to invest in order to increase the output. The logic of Hayes's theory started from the premise that total output was equal to total income. The students who examined this premise could see nothing wrong with it—although they felt that there must be something wrong with it. They were looking for something more complex. Previous experiences in economics had taught them to expect the complex rather than the simple.

The equality of income and output was described by
Moulton as follows:

"The inadequacy of consumptive demand is not, as some writers have argued, attributed to the alleged fact that the market prices of commodities necessarily exceed the sums disbursed in connection with their production. The truth is that there is an identity between the market price of a commodity and the sums received by those who have engaged in its production. If $100 is paid for a commodity, $100 is received by the seller, and any difference accruing to him over and above the disbursements to others for materials, interest, wages, etc., is profit. Since profits are also available for expenditure, they must obviously be included in the picture; and, when included, selling prices and the income of production necessarily become equal."(2)

The students granted that it was not likely that all savings would be invested, and that this fact would create a market problem if total income was equal to total output. They suspected, however, that Moulton was making the same assumptions as Hayes, and they wanted to be sure that they were not accepting Hayes simply as a consequence of having read Moulton, who agreed with him.

At the same time, it was granted that it was very probable that there was a market problem if the following statement by Moulton could be taken as fact:

"...The value of the total national production of goods and services in 1929, if divided equally among the entire population, would have given to each person approximately $665. There were nearly 6 million families with incomes less than $1,000; 12 million with incomes under $1,500; over 16 million with incomes under $2,000; and over 19 million families, or 71 per cent of the total, with incomes less than $2,500. A family income of $2,500, at 1929 prices, was a very moderate one, permitting few

---

(2) Moulton, Harold G. ibid. pp. 38-39
of the luxuries of life. Hence, it was clear that the consumptive requirements, and especially the wants, of the masses of the people were far from satisfied.

To raise the incomes of the 19.4 million families receiving less than $2,500 in 1929 to a $2,500 level, with no changes in the incomes of the families receiving more than that amount, would have required an increase in national production of more than 15 billion dollars. A horizontal increase of $1,000 in the income of all families receiving less than $5,000 in 1929 would necessitate an expansion of production to the extent of over 25 billion dollars. To give all the families of the nation a 'reasonable standard' of living, such as is set forth in studies made by the Bureau of Home Economics of the United States Department of Agriculture, would have necessitated an increase in production over 1929 levels of approximately 75 per cent. The full utilization of our productive capacity, it will be recalled, would have permitted an increase in production of only about 20 per cent, or 15 billion dollars. We were clearly not confronted in 1929 with over-production either actual or potential. The desires of the people were vastly greater than could have been satisfied by the productive power then available.  

It seemed from these data that we were in 1929 producing about 20 per cent less than we could produce, but that the use of all our idle capacity could not have produced enough to supply every one with a "reasonable standard" of living as the Department of Agriculture defined "reasonable." Thus our economy in 1929 had a production problem. Did it also have a market problem? Was idle capacity due to the impossibility of selling more than could be produced at 60 per cent of capacity? Did the presence of 20 per cent idle capacity mean that production was carefully planned so that there would be no market problem? Did the presence of 20 per cent of

(3) Moulton, Harold G. ibid. pp. 37-38
idle capacity mean that this much could be expected for the purpose of repairs and maintenance of capital equipment? Some of the students argued that there should always be some idle capacity in order that we might be able to increase production quickly in the case of an emergency such as war. These students were not sure that 20 per cent of idle capacity was 'abnormal'. They were not sure that it could be attributed to an inability to sell all that we were capable of producing.

The writer pointed out that an acceptance of the necessity for the existence of 20 per cent idle capacity in 1929 meant an acceptance of a standard of living far below what the Department of Agriculture defined as a 'reasonable standard' of living. It meant the rejection of full employment as a goal. It forced us to define the problem in terms of maximum employment and this included a definition of how much idle capacity was necessary for emergencies. A position which valued idle capacity was one which regarded the emergency of war as more pressing than the emergency presented by the existence of a less than reasonable standard of living.

Planning of our economy evidently included a plan for how much to produce as well as a plan for consuming what was produced. Perhaps an issue between Haslitt and Hayes had to do with who should do the planning. Haslitt
however, implied that planning of any kind was unnecessary. Could we avoid a market problem if there was no planning of any kind?

Reference was made by the writer to a study of markets made by a committee of the U. S. Senate called, Markets After The War. It was hoped that this study would help the group to determine whether there was a market problem in our economy which was usually with us. According to this committee report, it would be necessary for us to increase consumption after the war by at least 50 per cent above what it was during the war in order to avoid large-scale unemployment. This prediction was made in the face of the fact that consumption of non-military goods reached an all-time high during the war. The committee estimated that we would have in the neighborhood of 20 million unemployed any time that production after the war fell to the level of 1940. The committee reached this estimate in the following fashion:

"The ultimate limit of productive capacity is determined by the number of persons willing to work and the potential output per person. . . . .
"This capacity is continually growing. Between 1940 and 1946 another 2 1/2 million persons will have been added to the civilian labor force. . . . . It assumes that most of the women and other war workers who were not employed before the war will not seek employment after the war, and that there will be almost 2 million in the armed forces as against less than half a million before the war. . . . .
"Of equal importance in measuring the capacity of
the available manpower is a continuation of the past trend toward increased output per worker. This results partly from technological developments and partly from the shift out of less productive to more productive jobs. Over the 12 years, 1929 to 1941, the Nation's output per man-hour of employment increased 34 per cent. This was at the rate of 2 1/2 per cent per year compounded. There is ample evidence of about the same rate of gain during the preceding 30 years. It is likely to be accelerated rather than retarded by the war.

By combining the increase in the labor force with the increase in output per man-hour, and assuming that people will want to work about the same hours as in 1940, the potential capacity of the available manpower in 1945 is almost 50 per cent greater than the total output in 1940. . . .

...It seems almost certain that post-war output must exceed the best pre-war year. If it should be no more than in 1940 there would be the 9 million who were unemployed in 1940 plus the 2 1/2 million added to the civilian labor force between 1940 and 1946 plus 8 million who would be displaced by improvements in efficiency over the 6 years—a total of over 10 million unemployed. Even with an average work-week 5 hours shorter than in 1940 there would be more unemployment than the 13 million in 1932. "(4)

Other data from the Department of Commerce which was published in the conservative periodical, Business Week, indicated that all groups of workers other than anthracite and bituminous coal miners had suffered a loss in real income since the conclusion of the war. The same source indicated that teachers had been experiencing a steady decrease in real income since 1939. These data showed that almost all groups of workers experienced an increase of real income from 1939 which reached its peak in the middle of 1945. By the autumn

(4) 78th Congress, 1st Session, Senate Document No. 40
Markets After The War
Washington, D. C., U.S. Government Printing Office,
1943, pp. 2-5
of 1946 the real income of most workers was below what it was in 1945, but still above what it was in 1939. Real income was defined as the number of 1939 dollars available to the worker after the payment of taxes. In other words the term, real income, took into account increases in both taxes and prices since 1939.

Data from the Bureau of Labor Statistics showed that wages for productive workers in manufacturing increased fourteen per cent during 1946 while the cost of living had increased by eighteen per cent during the same period.

It was evident from these data that we were not increasing our ability to consume by anything like 50 per cent. In fact, the purchasing power of many persons had been decreased since the conclusion of our maximum efforts to win the war. If the report of the Senate committee was accurate, we were tending to create a market problem for ourselves.

The writer believed that it was necessary for the group to make a study of bank credit since Hazlitt, in his argument that there were no uninvested savings, had made no reference to the role of credit. He implied that banks made loans from the funds left with them by depositors. He implied that these were cash transactions. This argument had seemed quite reasonable to many of the
students. On the other hand, the argument for uninvested savings made by Hayes also seemed quite reasonable to some of the same students. It surely seemed reasonable to many students that loans came from deposits, and that money did not remain idle until a depositor withdrew it from a bank.

The writer felt that a consideration of bank credit was essential to a clarification of this conflict. It proved to be, however, one of the most frustrating experiences of the semester. The students acquired some understanding of the role played by bank credit in our economy but they did not grasp the concept sufficiently to enable them to interpret Hayes and Hazlitt.

The students found it difficult to believe that bank deposits represent, in many cases, loans already made rather than the capacity to make loans. They might have grasped this point if they had had some training in accounting, or better still some working experience in a bank.

The students also found it difficult to believe that the lending operations of banks were more closely related to the bankers' state of mind about the market for goods than to a capacity to lend measured by the saving funds available. Hayes had been saying in his theory that the more people saved the less banks would
lend because of what the act of saving did to the market for goods. This was completely different from Hazlitt's contention that the more that was saved the more that would be paid out as loans since there would be more funds available for lending. Hazlitt's position on this matter of loans being directly related rather than inversely related to the rate of savings was quite reasonable to most of the students.

Most of the students were bothered very much by the idea that bank credit seemed to lack any metallic backing. They had been taught to believe that money was not sound unless it was backed by a precious metal. They recognized that since the United States had gone off the gold standard it had not been possible to redeem currency in gold. Yet they believed that the currency was more sound if its supply was limited by the supply of gold in the treasury. It disturbed them to be told that a large part of our business transactions involved nothing more substantial than bank credit, a kind of money that had its origin in the expansive moods of bankers. At first, their reaction was one of disbelief. They could not reconcile this new idea with all that they had learned previously. They suspected some kind of trick at first. Later they felt that it must be true that much of our money (checks) had a value that rested upon faith, yet it also had to be
true, for them, that there was something behind the value of bank credit besides decrees, fiats, and estimates of the market.

The students did learn that the supply of money in our economy, if one lists checks as money, is determined by the judgments of bankers rather than by the regulations of government. They recognized that the Federal Reserve System had some control over the volume of bank credit but that this control was not sufficient to prevent booms and depressions in the issuance of bank credit. Consequently, we often had in our economy an expansion of bank credit when we needed a contraction, or a contraction of bank credit when we needed an expansion.

Despite the confusion over bank credit the students did find it easy to believe that a bank might not be able to find enough investment opportunities, and that this could result in the existence of uninvested savings. In the writer's opinion this represented clarification through over-simplification.

An attempt was made to clarify bank credit by bringing into the discussion a consideration of Kenneth Boulding's taxation plan. This was a plan for maintaining full employment through the stabilization of expenditures and income. The plan called for changes in the tax rates of the Federal government, such changes
to be related to changes in employment. Whenever employment would fall below the figure which was taken to represent full employment, Boulding would have the government reduce its income by cuts in its tax rates. This cut in taxes would not be accompanied by cuts in governmental expenditures. Thus the government would achieve a deficit without an expansion in expenditures such as the New Deal took to be necessary.

Boulding would have the government continue to cut taxes, and continue to enlarge its deficit, until full employment had been restored. If it was necessary in order to achieve full employment, the government would cut taxes to zero, and it would even begin to repay taxes already collected.

A part or all of the deficit would be financed by the issuance of greenbacks. Boulding considers these greenbacks no more unsound than other kinds of fiat money in our economy, including the checks and Federal Reserve Notes which we all use. Boulding grants that the issuance of such greenbacks is inflationary, but he says that the expansion of bank credit is also inflationary. The sale of interest-bearing war bonds had an inflationary effect whenever they were sold to banks since the latter usually financed their purchases by an expansion of bank credit. The only difference, according to Boulding, between inflating the currency through selling bonds to banks and inflating the currency...
through the issuance of greenbacks is the interest that one does not have to pay when the inflation is achieved in the latter way. Besides it is inflation that we seek to achieve during a depression since unemployment is one of the problems we are seeking to solve.

In comparing and contrasting Boulding with Hayes, the students pointed out that both men attributed unemployment to a lag between consumption and production. Both men attributed unemployment to the way in which income was used. The writer pointed out that both men made assumptions which were characteristic of the Keynesian school of economics. The writer also pointed out that Keynes, unlike Hayes, was not a socialist and that Keynes had favored an increase in investment rather than an increase in consumption as the key to full employment. Boulding, unlike Hayes, wanted to avoid the public ownership of large industries. Boulding wished to extend socialization to our money and banking system, but no further.

The similarity between Boulding and Hayes was apparent to many of the students who read Boulding's comments on the relationship between expenditures and income for these comments were very much like those made by Hayes in respect to the equality of income and output. Boulding argues that every expenditure is an income. The man who spends fifty dollars creates an income of
fifty dollars for others in the economy. If a man receives fifty dollars a week, and if he spends all of that income, he does not increase or decrease the total income of the economy. The man who spends only forty dollars of a fifty dollar income has a budgetary surplus of ten dollars which decreases the net income in the economy by a sum equal to the ten dollars. The man who earns fifty dollars and spends sixty has a budgetary deficit and this deficit increases the net income of the economy by ten dollars. When income and employment are falling, Boulding advocates that we reverse the trend through a budgetary deficit that is carried by the government. The government must do this since the individual cannot. The total analysis starts from the equation of expenditures and income just as Hayes's total analysis starts from the equation of output and income. The two equations really say the same thing. Students sometimes understand a theory better if it is said in more than one way.

Boulding is in favor of the achievement of a deficit through a tax cut rather than through an increase in expenditures because he believes that the first method will avoid unnecessary and wasteful expenditures. He is haunted by the fear of 'boondoggling'. The government should plan its expenditures each fiscal year in terms of needs other than the need for full employment. If the govern-
ment needs a deficit in order to avoid unemployment, it need not seek for ways in which to spend money.

Boulding's proposal raised questions other than those which had to deal with bank credit. Would the government be able to make intelligent use of our monetary and fiscal system? Would a government that lowered taxes and issued greenbacks in a period of deflated incomes and reduced employment be able to use a different approach in a period of inflation such as was characteristic of the war economy of the years 1940-45? Boulding's plan was one that aimed at stabilization of income and employment within a private enterprise economy. According to this policy an intelligent government would have a budgetary deficit in times of deflation and a budgetary surplus, or at least a balanced budget, in times of inflation. It is always possible that a government which found it wise to finance a part of its peacetime budget with greenbacks would find it expedient to finance a war budget in the same way. Issuing greenbacks in a period when goods for civilian consumption are scarce creates consequences quite different from issuing greenbacks when jobs are scarce.

In addition to the question of intelligence in government, the question of pressure groups also came up for discussion. Boulding's plan was one which called for debt-free financing. Such financing was likely
to encounter the opposition of those groups which now
make a living from the interest-bearing fiscal policies
of the government. Non-interest bearing notes (green-
backs) would be branded as unsound by conservative
bankers who derived an income from the purchase of
government bonds. This charge would probably be made
even though the issuing of greenbacks would have the
same effect as the expansion of bank credit, an ex-
pansion of bank credit which always accompanies the
sale of bonds to banking institutions rather than in-
dividuals. The only difference between the two poli-
cies is the fact that one is more profitable to pri-
vate financiers.

It is also true that Boulding's plan would leave
untouched the freedom of monopolies in our economy.
What would happen to the extra income created by Boulding's
adjustable taxation plan? Would it go to low income
groups who would increase their consumption? Would it
go to big income groups who would increase their savings?
As long as monopolies were free to raise prices it would
be possible for them to absorb additional income by rais-
ing prices. If this should happen the additions to in-
come resulting from a tax cut, would not produce an in-
crease in employment. Rather the new income would pro-
duce increases in the profits of monopolies.

In order to get Boulding's plan accepted it would
not only be necessary to overcome class opposition to it, but also it would be necessary for us to reduce the freedom of monopolies. Could we do this as long as monopolies were not owned by the government? Would government ownership do the job, or would it create one big monopoly such as Eric Johnston has warned against?

Another big obstacle to the acceptance of Boulding's plan is the failure of our educational institutions to clarify the meaning that money has. Because we have not learned to look at money functionally it would be easy for the leaders of banking and finance to convince us that greenbacks were less sound in value than the traditional instruments for financing a deficit. In fact, we have not even been free to examine in our educational institutions the idea that deficits may or may not bring us the prosperity that has been claimed for them. Neither have we been encouraged to examine the idea that deficits may or may not constitute a subsidy for an economy which is unable to sell its product.

Because such an examination has been almost entirely absent from our educational institutions, it would be easy for us to reject such a plan as Boulding's in advance of any rational examination of the ideas it embraces. We have not been taught to bring to new ideas in economics the same attitude of mind which the physical sciences bring to new ideas in their specialized
fields. The fostering of such an attitude of mind was one of the objectives in the course called Basic Economic Problems. Sometimes this objective was achieved so completely that the students could not make up their minds at all.

In summary, the discussions of Boulding's plan raised the following questions:

1.) Would our government possess enough intelligence to make it work?

2.) Would those who control our monopolies be able to defeat the purposes of the plan?

3.) Would our educational institutions do the job that is required before such plans as Boulding's are accepted or rejected uncritically?

The plan might fail because of a failure of intelligence in government. It might fail because its success would depend upon the support of powerful economic groups who would not have the same values as Mr. Boulding. It might fail to have intellectual scrutiny because of the kind of education we are now receiving.

It was quite apparent to the students that Boulding believed that our economy was cursed by a chronic inability to consume all that it was capable of producing. Many of the students were still not certain that such was the case with private enterprise. At the same time they did recognize that our economy had failed in the
past to provide steady employment. What could account for these occasional failures other than an occasional failure to consume the product of privately controlled technology?

Since Hayes had proposed government ownership as a solution to unemployment, it occurred to some of the students that a comparison of the Russian economy with ours might help us to determine whether there was a market problem in either economy which could or could not be explained in terms of economic institutions peculiar to each economy. In other words we might understand our own economy better if we compared it with that of the Soviet Union. This increased understanding of our own economy might help us to see more clearly whether there was a chronic shortage of buying power in our economy.

Hayes had argued that the revenue spent on advertising in our economy constituted evidence for the existence of a market problem. The writer referred the students to a condensation of W.L. White's Report On Russia in which the author deplored the lack of attractive shop displays in Moscow. White attributed this lack of display to a lack of competition in the Soviet economy. This explanation was different from the one implied by Hayes. The students were asked to indicate
what Hayes's explanation would have been and many of
them recognized that Hayes's theory implied the absence
of a market problem in a socialist economy.

The writer pointed out that Russia had not achieved
mass production to the extent that we had. He also point-
ed out that much of Russia's productive capacity was de-
voted to the creation of capital goods and war equip-
ment. What would be the consequences of such an alloca-
tion of productive capacity? Would there be a shortage
of consume goods rather than a surplus? Would there be
a market problem in the Russian economy as soon as a
switch was made to the mass production of consumer goods?
Could the Russians consume all that was produced once
production was concentrated upon the creation of consumer
goods? Was Hayes correct in saying that a socialist econ-
omy could either avoid a market problem or handle it more
intelligently when it did arise? How would the solution
to a market problem in a socialist economy be different
from the solution of a private enterprise economy? A pri-
vate economy would be likely to cut production until the
surpluses were consumed. What would be the socialist re-
sponse?

The students were uncertain in their answers to
many of these questions but they tended to say that the
Russians would have a market problem any time that they
concentrated on the production of consumer goods. There were a few who did not agree with this point of view but they were unable to say why there would be a difference. This was probably an idea that they had picked up from a reading of orthodox socialist theory. They did not understand Hayes's reference to the absence in a socialist economy of any need to avoid money losses as the market was cleared of any surpluses that happened to exist as the result of bad judgment of the market.

The writer pointed out that the Russians were asking for reparations from the Germans while we were not. Could this difference be explained by a difference in the two economies? What would be the consequences of our collecting reparations if we had a chronic market problem? Would the consequences be the same for the Russians if they had no market problem? Was Secretary of State Byrnes correct when he said experience after the first World War proved that reparations could not be collected? Were the reparations of the first World War not paid because they could not be paid, or because they were not wanted by the countries to whom they were owed?

The writer referred to the experience of the French and Germans at the conclusion of the Franco-Prussian War. The Germans had required the French to pay an indemnity of one billion francs. The French had paid this indem-
nity easily and had become prosperous in doing so. The Germans had become impoverished from collecting the indemnity. Why was this so? Was there anything in Hayes's theory which would explain this?

The writer also referred to the experience which the United States had had with war debts in the period immediately following the first World War. We had had great difficulty in collecting on the debts. Why was this so? Was there any relationship between this failure and the high tariff policy pursued during the twenties? Was a high tariff policy consistent or inconsistent with a policy of attempting to collect debts owed to us by other countries? At the same time that we were refusing to permit debtor countries to sell goods in our country we were lending sums of money abroad. How did this policy of lending abroad fit into a high tariff policy and a collect-the-debt policy?

The writer pointed out that a debt owed to the United States by Britain, for example, could be paid in gold, dollars, or goods. The British could not pay such a debt as was owed at the end of the war because they did not have sufficient gold, nor sufficient dollars. We kept out their goods with our tariff. The tariff in keeping out the goods also prevented the British from acquiring sufficient dollars to pay the debt since the sale of goods abroad is the chief way by which a nation
acquires holdings of foreign currencies. The students found this analysis easy to understand. They also saw that our resistance to goods from abroad suggested but did not prove that we had difficulty selling our own economic product. It was also recognized that the insistence of the Russians on reparations after this war meant that there was no difficulty in selling the domestically made product in the Russian economy. This could be explained by the fact that the Russian economy was less mature than ours, or it could be due to an inherent difference between a socialist and a capitalist economy.

If there is a market problem in our economy that is of a chronic nature, and if we are unable to solve that problem by increasing consumption at home, would we be able to solve it by increasing our export trade? If Hayes was correct in his theory, we had to export more than we imported in order to avoid surpluses on the domestic market. Where would other nations get the dollars with which to buy our exports? If they borrowed the dollars from us, they would be unable to repay the loans since we would have to limit their imports in order to achieve the net export surplus at which our policy was aimed. Was there any way out of this dilemma? If not, our policy amounted to giving away a part of our product in exchange for some bad debts.
It was recalled at this point that Hayes and Hazlitt had differed over the consequences of a high tariff policy. Hayes believed that such a policy was essential to our economy since it enabled us to dump abroad that part of the product which we were unable to consume at home because of our spending, saving, investment habits. Hazlitt saw the tariff as a policy which was economically wasteful in that it enabled us to produce goods which other nations could produce at lower costs. Hayes granted that it was wasteful but nevertheless necessary to an economy which had a chronic market problem. In other words an essential to our economy, according to Hayes, was the existence of waste and bad debts. In terms of Hayes's theory the only good investment, for example, was a bad one since it employed people but failed to put any goods on the market.

A fundamental difference between Hayes and Hazlitt was the fact that the former looked upon our economy as largely irrational in its institutions and practices. It was not possible, for example, for us to achieve both full employment and economical production under our system. Full employment and free trade were also incompatible. This last point in Hayes's theory is significant because it means that Hayes was not only criticizing private enterprise. He was also criticizing the traditional liberalism in our culture.

Hazlitt had a liberal position on the tariff but it
was a position which, according to Hayes, was inconsistent with some of the more conservative doctrines of Hazlitt. This inconsistency was a product of Hazlitt’s assumption that there was nothing fundamentally wrong with our system. Hazlitt is the kind of economist who would blame most of our economic problems on our failure to 'understand' our economy. Or more likely than this he would blame such problems as we have upon some devil in the system such as a speculator, a monopolist, or an interfering bureaucrat.

Again it was interesting to note that Hayes made some attempt to defend his position on the tariff by reference to data about our economy in the 1920’s. Hazlitt, on the other hand, rested his defense upon logic which was as good as the major premise from which it started.

Most of the students were unable to choose between Hayes and Hazlitt on the tariff. They tended to accept Hazlitt because he took a traditionally liberal position and most of the students tended to be that kind of liberal. At the same time they could not quite accept anything that Hazlitt said about trade unions since this was shockingly illiberal to the students. How could a man be so liberal on the tariff and so illiberal on unions, they would ask. They were accustomed to writers who liked unions as much as they disliked tariffs. The writer tried to help by pointing out that there was no necessity for either unions or tariffs in an economy as perfect as the one described by Hazlitt. This was not very much help, however,
since it is the kind of generalization which must come from a student if it is to be understood by the student. Perhaps a short course in nineteenth century liberalism would have helped these students.

It is not certain that many of the students acquired the clarification of the unemployment problem that they set out to achieve. Certainly the clarification was not such to enable them to make choices between Haye, Boulding, and Haslitt. Perhaps such a choice should not be expected of students who are beginning their study of economics. They had considered many different aspects of the economy under which they were living. They had had an opportunity to see that there is more than one school of thought in economics, and that each school has its own assumptions. This represented to the writer an opportunity that is seldom provided students who take a beginning course in economics. But in this course the students had been introduced, at least, to three schools of economic thought—the classical, the Keynesian, and the Marxist. In addition to becoming somewhat acquainted with these schools, they had the experience of examining two of the different schools in terms of their conflicts over the unemployment problem.

Was this kind of experience too mature for college students in their first year of work beyond the last year in high school? Many of the readings and discussions involved ideas that are not considered by college students before they reach the graduate school. The consideration
of such ideas was too mature for the students if one defines a mature experience as one which is understood 'thoroughly'. In the writer's opinion there is no such thing as a thoroughly understood experience—even at the level of the graduate school. Instead of worrying about the maturity level of a student one should worry about whether the ideas presented by the instructor are related to the problems held by the student. The students were 'ready' for many of the ideas that were discussed in Basic Economic Problems because they had questions and held inconsistencies which could be clarified by such concepts as problem, thinking, bank credit, Say's Law, distribution of income, free trade, tariffs, value of money, monopolies, corporate control of our economy, deficit-financing, reparations, and the like.

Some critics would criticize the content of this course by saying that the background of the students was inadequate for the ideas that were presented. What is meant by the term, inadequacy of background? Sometimes it means that a student does not possess the frame of reference that makes the examination of certain ideas a 'safe' procedure. The theory of conceptual learning assumes that concepts are learned, or reconstructed, when the learner encounters an inadequacy in his background. Inadequacy of background means that the learner has a problem. He faces a situation for which he has no answer, for which some meaning is not clear. The student
who had an adequate background in economics would have no problems and it would be a misnomer to call any of his courses in economics Basic Economic Problems. All his behavior in such a course would be on the level of recognition. He would learn nothing. He would at best report about his previous learning. When we say that a student should not be asked to think about certain ideas until he has a more adequate background we sometimes imply that he does not possess the 'right' absolutes.

The attempt to promote conceptual learning through the teaching of economics requires loyalty to only one absolute, the valuing of the scientific attitude as the method for determining whether an idea is true or not. This kind of absolute does not prevent the examination of alternative roads to truth as long as the examination is scientific. It does shut off the intuitive examination of intuition as a road to truth. It does not accept faith as the test of faith. This would be a dilemma except for the fact that philosophical idealists are, in fact, pragmatic in their testing of ideas. A current issue of The American Magazine contains an article by Robert Hutchins which does a thorough job of dealing pragmatically with the social implications of atomic energy.

We sometimes fail to achieve conceptual learning because we start with an idea that is unrelated to a student's background. There is nothing in the student's background that would be clarified by the idea. Or the
idea is so completely new that there is nothing in the student's background that could illustrate however inadequately the meaning of the new idea. This was probably what happened when the writer tried to teach his students the meaning of bank credit. The students had had some experiences with banks and their credit operations but the writer was unable to make the connection between what they had already experienced and what he wanted them to experience. Perhaps the writer knew too little about their previous experiences. Perhaps he should have provided a more direct kind of experience. There was a real failure to teach very much about bank credit and this failure might be due not to an inadequacy in background but to a difference in background, or to a lack of relationship between the background and the new experience. It might also be explained as a failure to use an appropriate method.

Early in this study the writer developed a list of questions which he thought would contribute to the clarification of attitudes if they were used in an appropriate context. These questions were used frequently in Basic Economic Problems. They are illustrative of the writer's teaching methods rather than the methods of all the instructors at Goddard College. However, the questions are more illustrative of the dominant approach to learning at Goddard College than of the dominant approach at Ohio State
University. The following questions constitute the list:

1.) Is this what you mean...?
2.) Can you illustrate that?
3.) What would be an example of that?
4.) How is that different from what... has said?
5.) Is that true of all cases?
6.) Is that a typical case?
7.) What is the evidence for that?
8.) Does that represent only your own feeling?

Does it also represent the way that you would like everyone to feel?

9.) Is that consistent with what you said a while ago?
10.) How would you plan to achieve such a change?
11.) Do you agree that...?
12.) How do you account for this...?
13.) Will you define the term,..., for us?
14.) Do you like the notion that...?
15.) Are you in favor of...?
16.) Do you cherish...?
17.) Do you want to protect...?
18.) Is it true that...?
19.) What would be some consequences of...?
20.) Is that exceptional or commonplace?
21.) How do you explain this exception?
22.) Is a statement true regardless of a few exceptions to the statement?
23.) Will someone try to summarize for us?
24.) Is it important to you that...
25.) Would it be better or worse to...
26.) Are those the only choices we have?
27.) Have we overlooked anything?
28.) Is it now our understanding that...
29.) Does it seem to you that...
30.) How far would you want to go with that?
31.) What are some things we now agree upon?
32.) What are some things we don't agree upon?
33.) What should we do next?
34.) Is this what troubles us?

These questions were used within a context that emphasized the consideration of controversial issues. Some of the questions ask students to say what they want, to say what they are for or against. Answers to such questions may reveal the attitudes or values of a student. Other questions in the list ask the students to use evidence, to plan next steps, and to summarize experiences. In general, one kind of question aims to make the discussion free while the other kind aims to make it experimental. According to the theory presented earlier, students have a chance to say what they value when a controversial issue is under examination and this examination must be free and experimental if one is to expect conceptual learning as an outcome.
What would constitute evidence for the achievement of conceptual learning? One kind of student behavior which might constitute such evidence would be the development of greater consistency in attitudes. However, such growth in consistency might result from the steady presentation of one point of view and if this were the case the learning might be perceptual. The presence of greater consistency in the attitudes of a student could be taken as evidence for conceptual learning if the methods of teaching were consistent with a theory of conceptual learning. The methods have been described and the reader will have to determine whether they are consistent with the theory of conceptual learning.

Inconsistency takes several forms. Sometimes there is an inconsistency between what a student says and other things that he does. For example, the student who says that he is in favor of social equality may refuse to make friends with Negroes. This is inconsistent of him unless he can show that his unfriendliness promotes social equality. Such inconsistency results from a failure to relate means to ends. Another kind of inconsistency has to do with what students say. One statement may be inconsistent with other statements. It is this latter kind of inconsistency with which this study is largely concerned. It is this same kind of inconsistency which the Scale of Beliefs is intended to measure.
The kind of controversy with which teachers are mostly concerned—when they are at all concerned with conceptual learning—is that kind which arises when the attitudes of one student conflicts with the attitudes of another student. Students may differ in their attitudes toward the segregation of Negroes and this is what teachers usually refer to when they use the expression, controversial issue. It is quite sound within the theory that has been described to look upon such controversy as an opportunity for reflective thinking. In order for this opportunity to exist the students who disagree must regard each other's point of view with respect. Respect for a point of view does not mean a ready acceptance of the point of view in any conclusive sense. Rather it means that the point of view is regarded as worthy of reflective consideration. The kind of discussion which brings into the open conflicts that exist among students may not result in reflective thinking because of the tendency on the part of everyone to regard an opinion different from his as nonsense. Because of this tendency the teacher who wishes to achieve conceptual learning through the processes of reflection will find it necessary to undermine the adequacy with which every student tends to regard his own expressions of opinion. This inadequacy can be created by identifying any inconsistencies which appear within the student.
For purposes of brevity, one may call one kind of controversy internal and the other external. External issues sometimes fail to result in reflective thinking because there is no real difference for the student as long as he regards the apparent difference as a departure from common sense. He can never have this feeling about the internal kind of issue. If he fails to be consistent, he will have feelings of inadequacy about the issue which can not be handled in the way that he commonly responds to external issues. For this reason the identification of internal issues is a little more promising than the airing of external issues although both kinds of issues have a role to play in the achievement of conceptual learning. Both kinds were considered in the course, Basic Economic Problems.

One of the big goals in Basic Economic Problems was greater consistency in attitudes. How completely should such a goal be achieved? The presence of one hundred per cent consistency in the attitudes of any student would be both impossible and undesirable. The presence of conscious inconsistency sets the stage for conceptual learning. Conscious inconsistency faces the student with a problem in which choice is essential to clarification. It is in this kind of situation that thinking may occur and such thinking is essential to the achievement of conceptual learning in the area of attitudes. This is the kind of controversy that many teachers
fail to exploit. Because this kind of controversy presents an opportunity for conceptual learning, it is undesirable that students be consistent in all that they say. It is also undesirable that they be unaware of many of their inconsistencies.

Not only is it undesirable for students to be one hundred per cent consistent in all that they say but also it is impossible. Philosophers sometimes explain this impossibility by reference to the imperfectibility of man. However, the philosophy of pragmatism pays no attention to the issue of man's perfectibility—an issue that can not be tested anyway. The pragmatic explanation deals with the fact that what is consistent in one situation may be inconsistent in another. It is educationally impossible to provide a student with a set of attitudes that would be consistent in all times and all places. Those who plan curricular objectives sometimes list a set of attitudes which are said to be consistent with one another. Some attitudes will always be inconsistent but the fact still remains that any set of attitudes may acquire inconsistency. Is it consistent, for example, to teach students to be kind and truthful in their relationships to one another and to other people? The question asked in this way hardly makes an answer possible since attitudes are consistently held only in reference to specific situations.
In many situations it is possible for one to make a truthful response without being unkind to one's listeners. In such situations the attitude of truthfulness is quite consistent with the attitude of kindliness. This is not always the case, however, since a refusal to tell the truth seems sometimes to be the kind thing to do. Such a problem arises over and over again as teachers give grades to their students. A passing grade for a given student may represent for the teacher an untruthful but kind response. A failing grade represents truth but unkindness. A teacher may describe the passing grade as a 'white lie'. He may defend the failing grade by saying that a student is better off if he knows the truth. He may say that the real issue is honesty rather than kindness. In this way the language helps to hide the presence of conflict. This does not gainsay the fact that for this particular situation the two attitudes were at odds with one another, that they were in a sense inconsistent with one another. It is deceptive to talk as if the conflict were an exception to the intrinsic consistency of one's values. The truth of the matter is that all consistency is intrinsic and all inconsistency represents the exception that is bound to arise within any set of values.

Sometimes the student knows what to do with a conflict between truthfulness and kindliness because he has
faced such a conflict before. However, if all his learn-
ing in the area of attitudes was perceptual in quality
he would never know what to value any time that his at-
titudes were in conflict. Learning how to value his
values seems to be an essential part of any educational
program which starts from the assumption that his values
are held consistently only for specific situations. In
Basic Economic Problems the student had a chance to value
his values whenever he faced such a problem as the one
which placed his valuing of a net export surplus over
against his valuing of the collection of international
debt.

The processes of historical change constitute an
additional reason for basing a part of the educational
program upon learning how to deal with inconsistencies
in attitudes and values. In the United States there has
been for a long time a favorable attitude toward the
private control of capital goods. At one time such an
attitude seemed quite consistent with a favorable attitude
toward the achievement of economic security for everyone.
Everyone who was willing to work was able to achieve
economic security of a sort and the private control of
capital goods did not prevent the achievement of such
security. At the present time the character of the tech-
nology is so different from what it was that many people
are saying that the achievement of economic security is
inconsistent with the private control of capital goods. If these people are correct in what they say, then, the American people face a problem in valuing that cannot be solved by an emphasis upon the perceptual learning of the attitudes that are traditionally with us. The clarification of value conflicts that arise from cultural change seems to be a function quite appropriate to the teaching of economics or any of the other social sciences.

The American people have had for a long time a favorable attitude toward each person earning his own living. This has sometimes taken the form of saying that 'if you don't work, you don't eat'. We refuse to provide the unemployed with a high standard of living. Any relief which is provided for the unemployed is gauged at a level of minimum subsistence. This attitude is quite consistent with the attitude in favor of what Marx called a reserve supply of labor which would act as a brake upon the rising cost of labor. This attitude is also consistent with some of the needs in a period of inflation. However, such an attitude is inconsistent with the desire to consume all that the economy can produce. It is certainly inconsistent with the desire to recover quickly from an economic depression. Such an attitude would be highly inconsistent with the desire to make full use of atomic energy for industrial purposes. It is hard to see how one could require work
as a condition of consumption in an atomic energy society unless one were willing to accept fascist controls. This whole problem was considered in Basic Economic Problems when some students questioned the value of full employment as a goal for a society that was highly industrialized.

The fact of social change requires us to reexamine values because inconsistency would result from accepting values and attitudes that come from the past. Traditionally, the American people have valued basing a worker's income upon his productivity. It has been said that a worker's income should vary with his productivity. Traditionally, the American people have also had some regard for taking the needs of the worker into account as his weekly wage is figured. There is no conflict here as long as the men with the most children produce the most goods. More often than not, however, it has to be decided whether to pay a man according to how much cotton he picks or according to how many children he has. The reality of this conflict in the American tradition is illustrated every time that a group of fifth grade children agree that the most efficient cotton pickers should make the most money and will agree also that the man with the largest family should receive the most money. Sometimes the conflict is smoothed over by saying that people should not have children unless they can pick cotton fast enough to support them. This simply changes the character of the conflict since an
attitude is now expressed which conflicts with the traditional valuing of the family and the place of children in the culture.

In summary, the approach to attitudes in the teaching of Basic Economic Problems started from three assumptions. First, attitudes should never be one hundred per cent consistent with one another because the presence of consciously recognized inconsistency constitutes an opportunity for conceptual learning. Second, the achievement of one hundred per cent consistency is impossible because what is consistent in one situation is inconsistent in another. This is so because society is changing and because consistency is a function of a specific situation. Because consistency arises again and again as a problem in human relations we need to emphasize attitudes as one of the products of conceptual learning. Students need to learn how to value, how to make choices when values are in conflict. Third, the fact that one cannot achieve perfection in consistency does not make the examination of inconsistency a valueless educational experience. The attempt to achieve a consistent position every time that one is conscious of inconsistency is something that one will always try to do. If this is done experimentally, the moral life will be more free from dogma. Students will come closer to getting what they want and they will be better prepared for the facing of other inconsistencies as a result of the conceptual learning that may arise from the reflective handling of value conflicts.
CHAPTER V

PRESENTATION OF DATA ON CONSISTENCY OF ATTITUDES

A theory of conceptual learning and its implications for methods of teaching has been presented. Goddard College and one of its typical courses of study has been described in order to point up the differences between the educational experiences of the experimental and control groups. The final task in this study is to present and interpret the data collected on consistency of attitudes. It is being assumed that growth in consistency represents conceptual learning since the methods dominant at Goddard College are consistent with a theory of conceptual learning.

The data which were collected for this study indicate that the students in the experimental group made significant gains in consistency of attitudes during a nine week period. This was also true of the students in the control group at Ohio State University. However, the two groups were not significantly different in their mean inconsistency scores at the beginning of the nine week period, while they were significantly different at the end of the nine week period. Before describing and interpreting these data an attempt will be made to report on how the data were obtained.

There is a copy of the Scale of Beliefs in the appendix. This is the instrument which was used in getting evidence on the attitudes of the students at Goddard
College and Ohio State University. All previous use of this instrument has indicated that it is a reliable and valid test. This test may be scored for liberalism, uncertainty, conservatism, and inconsistency. The inconsistent score refers to the internal kind of issue that has been discussed earlier.

Scale of Beliefs 4:21 consists of 100 statements each one of which represents a possible attitude for the students who respond to it. Students mark with an A each statement with which they agree. They mark with a D each statement with which they disagree. They mark with an U each statement about which they are uncertain. Certain responses are scored as liberal while other responses are scored as conservative. It is possible, though not probable, for a student to be one hundred per cent liberal, conservative, or uncertain in his responses.

A student would be scored as having made a liberal response if he agreed with any of the following statements:

1.) Complete freedom of speech should be given to all groups and individuals regardless of how radical their political views are.

2.) In this day of economic interdependence, it is desirable that we buy goods from other nations.

3.) Poverty and unemployment could be eliminated if the problem were attacked intelligently.

4.) The best of medical care should be provided for rich and poor alike.
5.) Negroes should be allowed to go anywhere white people are allowed to go.

A student would be scored as having made a liberal response if he disagreed with any of the following statements:

6.) Freedom of speech should be denied all those groups and individuals that are working against democratic forms of government.

7.) We should buy foreign products only when American goods are not available.

8.) No matter what social system is created, unemployment and poverty can not be eliminated.

9.) The quality of medical services made available to individuals should depend upon their ability to pay.

10.) Negroes should not be allowed to go to the same hotels, restaurants, and theatres as whites.

A student who agreed with any one of the statements numbered six to ten inclusive would be scored as having made a conservative response. A student who disagreed with any one of the first five statements would also be scored as having made a conservative response.

If a student agreed or disagreed with both statement number one and statement number six, he would be scored for an inconsistency. The same would be true of statements two and seven, three and eight, four and nine, five and ten. A student would also be inconsistent if he agreed with one of the statements in a pair and was uncertain about the other statement in the pair, or if he disagreed with one half of a pair and was uncertain about the
other half of the pair.

The following types of responses represent inconsistencies on the Scale of Beliefs:

A-A  
D-D  
A-U  U-A  
D-U  U-D

The following represent the only kinds of consistent responses on the Scale of Beliefs:

A-D  D-A  
U-U  
D-A  A-D

Statements one to five were taken from Scale of Beliefs 4:21 and statements six to ten were taken from Scale of Beliefs 4:31. There are 100 statements on each form. For each statement on 4:21 there is an opposite statement on form 4:31. Thus, there are one hundred opportunities for a student to be inconsistent. It is possible to get scores for liberalism, uncertainty, and conservatism by administering one form of the Scale of Beliefs. It is necessary to administer both forms in order to get a score for inconsistency. In this study both forms were administered to both the control and experimental groups. Pre-test and post-test results are available from both groups.

The total scores for liberalism, uncertainty, conservatism, and inconsistency on the Scale of Beliefs may be broken down into part scores. Some of the statements on the Scale of Beliefs deal with the area of race. Other
statements deal with the areas of militarism, labor and unemployment, nationalism, democracy, and economic relations. The use of part scores gives one a pattern of liberalism, uncertainty, conservatism, and inconsistency for each student that suggests in what areas each student is most liberal, most uncertain, most conservative, and most inconsistent. The existence of parts within the Scale of Beliefs is probably not apparent to the students since the statements for each area are scattered throughout the two forms of the scale.

The character of the scale is such that a student may become more consistent in his responses by becoming more liberal or more conservative in his responses. The student who had no uncertainties and who marked all the statements in either a liberal or a conservative way would be one hundred per cent consistent in his responses. It is necessary to note this relationship within the structure of the scale since it has been assumed that a growth in consistency of response to the scale represents conceptual learning. This is probably true when such increased consistency follows the use of methods which are free and experimental. Nevertheless, it must be recognized that the consistency score could increase as a result of an emphasis upon perceptual learning. The steady presentation of liberal or conservative propaganda could result in higher consistency scores and such an increase in consistency of response would probably be evidence for perceptual
rather than conceptual learning. In order to interpret the consistency scores in this study one should keep in mind the difference in methods that has been described earlier.

Whether or not the data on consistency can be treated as evidence for the presence or absence of conceptual learning is one kind of problem in significance. Another kind of problem in significance has to do with the probability of obtained differences in mean scores. For example, the control group in this study had a mean inconsistency score of 36.06 at the end of the experimental period, while the experimental group had a mean inconsistency score of 28.6. Whether this difference in means can be treated as the consequence of chance or extra-chance factors is a problem in probability which can be solved statistically. The statistical procedure involved in this probability test calls for the use of a null hypothesis. The use of a null hypothesis has the virtue of introducing into this investigation more specificity. The idea that the groups at Goddard College made gains in consistency that were significantly greater than the gains made by the group at Ohio State University is somewhat general in its character. A more specific idea would be easier to test. The value of specificity in an idea has been expressed by Henry Garrett as follows:

*A psychological experiment is designed to answer some question which the investigator has in mind. The investigator's hypothesis may be in the nature of a general proposition or it may be a specific query. A specific hypothesis is, ordinarily, to be preferred to a general
one, as the more definite and exact the thesis the greater the likelihood of a conclusive answer..."(1)

Statisticians sometimes use a null hypothesis in order to give meaning to the expression, significantly greater than, when it appears in a general hypothesis. Since such an hypothesis will be used in this study, it is necessary to illustrate what is meant by a null hypothesis. Suppose that an investigator has evidence that the mean score for a group of sixty boys on a vocabulary test is lower than the mean score for a group of sixty girls. He wishes to determine the statistical significance of his data. If the two groups were chosen at random, can he conclude that boys in general have smaller vocabularies than girls? In other words, can he take his random samples as representative of the general population? The null hypothesis which he would employ in this case would deal with the probability that he would have obtained the difference in mean scores if there was no difference in the general population from which he drew his samples. His null hypothesis would be that the true difference between the mean vocabulary score of boys and the mean vocabulary score of girls was zero. He would test this null hypothesis by using a statistical procedure called the t-test. This is a test which enables him to tell what the probabilities are for getting an obtained

difference in means if the true difference in means is zero. If the probability was 1/100, he would reject the null hypothesis. In other words, it would seem more reasonable to believe that there was a true difference greater than zero than to believe that the sampling results represent an one hundred to one shot. But the rejection of the null hypothesis does not exclude the possibility that the true difference is zero. The rejection of the null hypothesis in this case simply means that the investigator is able to answer one kind of question in significance by saying that the difference in means is significant at the .01 level, meaning that such a difference in means would occur by chance once in a hundred random samples if the true difference in means was zero.

The rejection of a null hypothesis does not force the acceptance of some contrary hypothesis. This may be illustrated by reference to the much disputed experiments in extra-sensory perception. Again Garrett is the source of the reference:

"The extra sensory perception (ESP) experiments offer a good illustration of the null hypothesis. In a typical experiment in ESP a pack of twenty-five cards is used. There are five different symbols on these cards, each symbol appearing on five cards. In guessing through a pack of cards, the probability of chance success with each card is 1/5 (on the average), and the number of 'correct calls' in a pack of twenty five cards should be five. If a subject calls the cards correctly considerably in excess of chance expectations (i.e. in excess of five) the null hypothesis is rejected. But
the rejection of the null hypothesis does not force the immediate acceptance of ESP as the cause of extra-chance results. Before this conclusion can be reached we must demonstrate in a series of experiments that extra-chance results are obtained when we have eliminated all likely causes such as runs of cards, cues, poor shuffling and recording, and the like. If under rigid controls results in excess of chance are consistently achieved, we may reject the null hypothesis and accept ESP. But the acceptance of ESP, as of any positive hypothesis, is necessarily tentative and is contingent upon further work. *(2)*

It makes no difference how many times one repeats a particular experiment; the repetition of an experiment together with the securing of the same results proves no more than was proved the first time. The null hypothesis is accepted or rejected, and the rejection of the null hypothesis does not force the acceptance of a causal hypothesis. The testing of a null hypothesis is nevertheless a worthwhile procedure. It is always worthwhile to determine whether a difference between two groups can be attributed reasonably to factors other than chance. If chance is not a reasonable explanation of a difference then one may reasonably seek for another explanation.

In the present study there are from two groups before and after scores for the liberalism, uncertainty, conservatism, and inconsistency of responses to the Scale of Beliefs. One group, the control at Ohio State University, has experienced the lecture-recitation emphasis during the nine weeks between the before and after results. The

*(1)*Garrett, Henry *ibid.* pp. 233-234
experimental group at Goddard College has experienced the discussion emphasis during the nine weeks between the before and after results. The t-test may be used to test the significance of any difference in means existing between the two groups. This test may be used in order to answer the following questions:

1.) Is the mean score of the Ohio State University group on the pre-test significantly different from the mean score of the Goddard College group on the pre-test?

2.) Is the mean score of the Ohio State University group on the pre-test significantly different from the mean score of the Ohio State University group on the post-test?

3.) Is the mean score of the Goddard College group on the pre-test significantly different from the mean score of the Goddard College group on the post-test?

4.) Is the mean score of the Ohio State University group on the post-test significantly different from the mean score of the Goddard College on the post-test?

Using the t-test in order to answer the first question enables one to say whether it is reasonable to treat the control and experimental groups as random samples of the same population. If the difference in mean scores between the two groups on the pretest were significant, say, at the .01 level, then it would be necessary to treat the two groups as being so different initially as to make difficult, if not impossible, the testing of any hypothesis that would attribute a later difference to a difference in teaching methods.

The use of the t-test in order to answer question number two enables one to determine the extent to which
a difference in means within a group between pre-test and post-test results can be attributed to chance. If one should find that the difference were significant at the .01 level, then, it would be reasonable to conclude that the group changed significantly during the period between the pre-test and the post-test. The difference in mean scores on the pre-test and post-test of the experimental group may be tested in the same way in order to answer the third question. The use of the t-test in order to answer the second and the third question deals with the significance of a difference in the means of related groups.

The use of the t-test in order to answer questions one and four deals with the significance of a difference in the means of independent groups. If the two groups were significantly different on the post-test, if both groups changed significantly between the pre-test, and the post-test, and if the two groups were not significantly different on the pre-test, then, one could reject the following null hypotheses:

1.) The true difference between the pre-test and post-test means of each group is zero.

2.) The true difference between the two groups on the post-test is zero.

One could also accept the null hypothesis:

1.) The control and experimental groups may be treated as random samples of the same population.

Whether a difference in means is significant or not
depends upon how rigorous a test one wishes to give to his data. The most rigorous test that can be given with present statistical tables is the .01 level of significance. The next most rigorous test is the .02 level of significance. In this study a difference in means will not be considered significant unless it is significant at the .01 or .02 level. This means that a difference in means will be considered significant if it could occur by chance no more than once or twice in a hundred trials.

It will be recalled that pre-test and post-test results on the Scale of Beliefs are available for forty four students at Goddard College. For purposes of further analysis the forty two students in the experimental group have been divided into four sub-groups. The first sub-group, Group A, consists of twenty-three students who took the Scale of Beliefs at the beginning of their first semester at Goddard College and again nine weeks later. The students in Group A were not only in their first semester of college but also they were in their first semester of work with the writer.

The second of the sub-groups, Group B, consists of thirteen students who took the Scale of Beliefs at the beginning of their second semester at Goddard and again nine weeks later. The second semester at Goddard was also their second semester of work with the writer. The students in Group B were a part of the students in Group
A. In other words, there are four sets of scores for thirteen of the twenty-three students in Group A.

The third sub-group, Group C, consists of eight students at Goddard College who took the Scale of Beliefs at the beginning of their second semester at Goddard which semester was their first with the writer. Of course, they took the Scale of Beliefs again nine weeks after the semester began.

The fourth sub-group consists of eleven students who had been at Goddard College for a year or more when they took the Scale of Beliefs for the first time. The students took the test at the beginning of the second semester of the year 1946-47 and again nine weeks later. Five of the eleven students in Group D had work with the writer in the first semester as well as the second.

The students in Group A on the pre-test are (on the average) more liberal, more uncertain, less conservative, and less inconsistent than the students at Ohio State University on the pre-test. (See Table I.) The difference in mean scores for liberalism, uncertainty, and inconsistency, however, is not significant at either the .01 or .02 level. The difference in average inconsistency is not even significant at the .50 level. Only the difference in average conservatism is significant at the .01 level. The data from Table I means that it is reasonable to accept the null
hypothesis that Group A and the control group are random samples of the same population so far as liberalism, uncertainty, and inconsistency are concerned. It is reasonable to reject the null hypothesis so far as conservatism is concerned. (3) The acceptance of the null hypothesis means that the two groups were sufficiently alike at the beginning of the experiment to warrant their comparison at the end of the experiment provided that the comparison is confined to the mean scores for liberalism, uncertainty, and inconsistency. The difference in mean scores for inconsistency is of most concern since the major hypothesis in this study refers to growth in consistency of attitudes.

The t-scores do not prove that the two groups are random samples of the same population; neither do they prove that the two groups are not random samples of the same population. The t-scores simply prove that if the two groups were random samples of the same population then the difference in mean scores for inconsistency could occur by chance more than fifty times in a hundred trials, and the difference in mean scores for liberalism could occur by chance more than five times in a hundred trials, and the difference in mean scores for uncertainty could occur by chance more than ten times in a hundred trials. In the face of probabilities

(3)Lindquist, E.F. *Statistical Analysis In Educational Research* N. Y. Houghton Mifflin Co. 1940, pp 56-58
as great as 50:100, 5:100, and 10:100, it is not reasonable to reject the null hypothesis of no true difference in means, or somewhat more exactly, the null hypothesis that the two groups are random samples of the same population. It is possible to argue that the level of significance employed at the beginning of the experiment should be less rigorous than that employed at the end of the experiment. If one accepts that argument, it still remains true that the difference in mean inconsistency at the beginning of the experiment is not even significant at the .50 level.

A statistically significant difference in means on the pre-test for both groups would cast grave doubt upon the wisdom of comparing the two groups on the post-test since a later difference could be the reflection of the initial difference.

The next step in the analysis of the data is one which determines the significance of the difference in means on the post-test and pre-test for both the Ohio State University group and Group A. This step involves the use of the t-test within each group rather than between groups. This use of the t-test deals with the significance of the difference in the means of related measures. (4) The data from Tables III and IV indicate that both groups became significantly more liberal and more consistent during the experimental period of nine weeks. Moreover, the control group became significantly

(4) Lindquist, E. F. Ibid. pp. 58-59
less uncertain and Group A became significantly less conservative.

The Ohio State University group had a mean inconsistency score of 40.2 on the pre-test. On the post-test this mean inconsistency score was 38.06. Such a difference in means could occur by chance once in a hundred trials.

Group A had a mean inconsistency score on the pre-test of 38.75. On the post-test the mean inconsistency score was 28.6. This difference in means could occur by chance once in a hundred trials.

It is reasonable to conclude that the two groups became significantly more consistent during the experimental period despite a difference between the groups in methods of teaching.

Although both groups became more consistent it does not follow that the groups were equal in their growth toward consistency. From Table II it is learned that Group A had a mean inconsistency score on the post-test of 28.6 while the control group had a mean inconsistency score on the post-test of 38.06. This difference in means is significant at the .02 level. Since the two groups were not even different in mean inconsistency at the .50 level nine weeks earlier, it is reasonable to conclude that Group A grew in consistency much more than did the control group.
The statistical treatment of the data from Group A and the control group may be summarized in terms of its meaning for the major hypothesis in this study. On the pre-test the two groups did not differ significantly in their mean inconsistency. During the experimental period both groups became significantly more consistent. On the post-test Group A was (on the average) significantly more consistent than the control group. The greater growth in consistency achieved by Group A may be due to the difference in methods existing between the two groups.

In both groups the growth in consistency is accompanied by a growth in liberalism. In the group at Goddard College the growth in liberalism and consistency is also accompanied by a significant decrease in mean conservatism. These related growths are inherent in the structure of the Scale of Beliefs and it is possible that the change in consistency for both groups represents perceptual learning. The writer does not believe that all the growth in consistency within the control group can be explained as perceptual learning since it is not customary for students at Ohio State University to be submitted to a steady stream of liberal propaganda. It is possible that students at Ohio State University achieve a considerable measure of conceptual learning despite the methods of teaching that are dominant at that institution.
The writer also believes that most of the consistency achieved within Group A may be interpreted as conceptual learning because of the emphasis upon discussion at Goddard College. In other words, the evidence suggests that both groups achieved some conceptual learning, and that the achievement was greater in Group A as a consequence of the difference in methods.

The belief that the growth in consistency within Group A is evidence for conceptual learning is strengthened by the data from Group B. The use of the t-test with the data from Group B suggests that some of the students in Group A retained the growth in consistency achieved in the first semester. Group B consists of thirteen students who were among the twenty-three students in Group A. The data from Group B was collected at the beginning of the second semester (two months after the post-test for Group A) and again nine weeks after the second semester began. At the beginning of the second semester the students in Group B were significantly more liberal, less conservative, and more consistent than the control group. (See Table VI) The significant difference in mean inconsistency suggests that the students in Group B retained much of the growth in consistency achieved in the first semester and a closer examination of the data shows that this is the case. A comparison of the post-test results of Group A with the pre-test results of
Group B shows that five of the students in Group B were more consistent at the beginning of the second semester than they were two months earlier at the end of the first semester. The mean inconsistency of the students in Group B at the beginning of the second semester is below what it was for the same students at the end of the first semester but the difference fails to be significant at the .05 level. Taking chance differences into account it seems reasonable to conclude that the students in Group B retained (on the average) the growth in consistency achieved in the first semester.

A growth in consistency that results from perceptual learning is likely to be temporary in character. This is very likely to be so when the growth in consistency takes place within a period as short as nine weeks. The extent to which some of the students in Group A retained their growth in consistency over a period as long as two months makes it reasonable to believe that the growth is a reflection of conceptual learning. This conclusion must be highly tentative until it is tested under controls more rigorous than obtained in this study.

A comparison of the mean inconsistency score of Group B on the pre-test with the mean inconsistency score on the post-test nine weeks later indicates that Group B became more consistent during the second semester. The difference in mean inconsistency is significant at the
.02 level. (See Table V) Thus, Group B was on the average more consistent than the control group on both the pre-test and the post-test. This is also true for the mean liberal score and it is also true that Group B was less conservative than the control group on both the pre-test and the post-test. (See Tables VI and VII) In terms of the major hypothesis in this study Group B was significantly different in its mean inconsistency not only at the end of the second semester but also from the very beginning of that semester because it retained on the average the growth of consistency achieved in the first semester, and because it continued to grow in consistency during the second semester. The students in Group B were college freshmen in their second semester at Goddard College which was their second semester with the writer and his conception of learning.

Group C consists of eight students who had been at Goddard College for one semester, had completed their Winter Work Period, and were beginning their first semester of work with the writer and his conception of discussion when they took the pre-test. The significance of the data from this group depends upon whether one includes the data for one student who was under the observation of a psychiatrist during most of the school year. When one includes the data from all eight students the group differs from the control group on the pre-test in its mean scores for liberalism, conservatism, and inconsistency. Group C
is more liberal, less conservative, and more consistent than the control group and these differences are significant at the .01 or .02 level. (See Table IX) The fact that Group C is more consistent than the control group on the pre-test may be the consequence of learning which took place at Goddard College during the first semester. It is true that the students in Group C had no work with the writer during the first semester but they did have work with other instructors who emphasized the discussion method. Scores on the Scale of Beliefs for the students in Group C are not available for the first semester. It seems reasonable to assume that Group C would not have been significantly different from the control group in its mean inconsistency at the beginning of the first semester since Group A was not, and since Group A accounts for more than one-fifth of the total enrollment at Goddard College. It is even more certain that the difference in consistency between Group C and the control group at the beginning of the second semester can not be attributed to the teaching methods of the writer since Group C did not experience those methods until after the pre-test scores were acquired at the beginning of the second semester.

Further examination of the data from Group C reveals that the eight students did not change significantly in any of their mean scores. The change in mean inconsistency failed to be significant at the .50
level. This failure to achieve significant growth in consistency is not consistent with the data from Groups A and B.

The data from Group C has its meaning changed considerably by the omission of the pre-test and post-test scores for one student. One of the students had a pre-test inconsistency score of 67 which was very much above the group mean of 29.75. This same student had a post-test inconsistency score of 84 which was very much above the group mean of 27.5. This student was under the observation of a psychiatrist for much of the school year. He was unsuccessful in most of his college work and he did not plan to return to the college after the end of the year.

When the scores for this student are omitted, the difference between the mean score for inconsistency on the pre-test and the post-test becomes significant at the .02 level. While the omission of these scores makes the group data like the data from Groups A and B it does not seem wise to do so since it is possible that there are students in Group A or B who had unidentified psychiatric problems.

Group D consists of eleven students who had been at Goddard College for a year or more when they took the Scale of Beliefs for the first time. Six of the eleven students took the Scale of Beliefs at the beginning of their first semester of work with the writer and again
nine weeks later. The other five took the pre-test at
the same time but this represented the beginning of their
second semester with the writer. These five students
also took the Scale of Beliefs post-test nine weeks after
the pre-test.

Group D consists of eleven students who had been
at Goddard College for a year or more when they took the
Scale of Beliefs for the first time. Six of the eleven
students took the Scale of Beliefs at the beginning of
their first semester of work with the writer and again
nine weeks later. The other five took the pre-test at
the same time but this represented the beginning of their
second semester with the writer. These five students
also took the Scale of Beliefs post-test nine weeks after
the pre-test.

Treating these eleven students as one group one
finds that the mean scores for both inconsistency and
liberalism on the post-test is significantly different
from the mean scores on the pre-test. The differences
are significant at the .01 or .02 level. (See Table XI)
Group D on the pre-test differs from the control group
in mean inconsistency at the .01 level of significance.
(See Table XII) This difference in mean inconsistency
is of the same significance on the post-test. (See Table XIII)

If the students in Group D are broken down into sub-
groups, one finds that the mean inconsistency score on
the pre-test of the five students who had had a semester
of work with the writer is not significantly different from
the mean inconsistency score of the six students who had
had no previous work with the writer. This difference in
mean inconsistency is still insignificant nine weeks la-
ter. The two groups are more alike on the post-test how-
ever. On the pre-test the difference in means is sig-
nificant at the .10 level while on the post-test the dif-
ference is not even significant at the .50 level.

The students in Group D who had had previous work
with the writer made more significant gains in consisten-
cy than did the other students in the group. The five
students who had had previous work with the writer had a
mean inconsistency score on the pre-test of 23.8. On the
post-test these students had a mean inconsistency of
17.6. The six students who were beginning their first
semester with the writer had a mean inconsistency of 29.8.
On the post-test these students had a mean inconsistency
of 17.8. The difference between 23.8 and 17.6 is sig-
nificant at the .02 level while the difference between 29.8
and 17.8 is significant only at the .05 level. Perhaps the
group of five made more significant gains as a result of
having had more work with the writer. However, it is
unlikely that the amount of work with the writer would
have anything to do with this difference since the two
groups were not significantly different on the pre-test
means. The sample is very small, moreover, and the evi-
dence is not conclusive enough to constitute a test of
the writer's methods rather than the total educational
program at Goddard College.

This completes the statistical treatment of the
data on attitudes. The following conclusions seem to
be reasonable:

1.) Both the control group and the various experi-
mental groups (with the exception of Group C) achieved
significant growth in consistency of attitudes.

2.) The growth of consistency in attitudes in Group
A exceeded the growth in the control group.

3.) The students in Group A who were also in Group
B retained on the average the growth in consistency over
a period of two months.

4.) There is no conclusive evidence that growth in
consistency is more closely related to the methods of the
writer than to the total educational program at Goddard
College while it is conclusive that such growth is more
closely related to the total program at Goddard than to
the lecture-recitation emphasis experienced by the students
in the control group.

A final question in significance is one which is not
susceptible to statistical treatment. Whether the growth
in consistency can be interpreted as conceptual learning
is difficult to say because the Scale of Beliefs, like
most other evaluation instruments, measures learning which
may be perceptual or conceptual in quality. Until instru-
ments are developed in the field of attitudes that measure
conceptual learning alone the final test for the quality of
achievement in attitudes must be the character of the teaching
methods. The writer is of the opinion that the consistency
achieved in the experimental group is largely conceptual in
quality but this must be a highly tentative conclusion in
the absence of better evaluation instruments for the measuring of conceptual learning.

The idea that the consistency achieved by the experimental group is evidence for conceptual learning is, at least, not refuted by the data available on the respective thinking ability of the control and experimental groups. The control group, and experimental groups A, C, and D took the Nature of Proof, No. 6 at the beginning of the experimental period. This test is intended to gather evidence on the thinking ability of college students. On the pre-test the students in groups A, C, and D were on the average significantly better thinkers than the students in the control group. In other words, the students in the experimental group possessed a greater ability to conceptualize than did the students in the control group.

Some of the consistency achieved in the experimental group was probably caused as much by the difference in thinking ability as by the difference in teaching methods. It is not possible within this study to say which was major. It is very probable that the difference in consistency is due to both the difference in methods and the difference in the ability to think. Because this is so the conclusion that the major hypothesis is true must be highly tentative. Future research must bring the variable of thinking ability under control.

In the writer's opinion this future research should
take the following outline; two or more groups should be selected carefully from the same school or college. The groups should be taught by the same teacher. It would be desirable to vary the methods within each group but one of the groups should have discussion emphasized while another group should have a lecture-recitation emphasis. The control and experimental groups should be comparable in chronological age, intelligence, past achievement in subject matter, thinking ability, consistency of attitudes, class size, curriculum materials, and major area of study. These comparabilities should exist at the beginning of the experimental period. A later difference in consistency in attitudes, if it appeared, could then be attributed to a difference in methods with a level of confidence that is not possible in this study. Even though such controls exist in future experimentation the interpretation of growth in consistency as evidence for conceptual learning must rest upon an examination of differences in method of teaching. This must be so in the absence of valid and reliable techniques for acquiring of evidence on the presence or absence of conceptual learning alone.
APPENDIX
### TABLE I

**SIGNIFICANCE OF DIFFERENCE IN MEANS**  
**SCALE OF BELIEFS 4.21 and 4.31**  
**PRE-TEST RESULTS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N 60)</td>
<td>61.7</td>
<td>13.8</td>
<td>24.4</td>
<td>40.2</td>
</tr>
<tr>
<td>Goddard College, Group A (N 23)</td>
<td>66.6</td>
<td>15.8</td>
<td>17.76</td>
<td>38.75</td>
</tr>
<tr>
<td><strong>t-scores</strong></td>
<td>1.9</td>
<td>.91</td>
<td>3.24</td>
<td>.604</td>
</tr>
<tr>
<td><strong>Level of Significance</strong></td>
<td>-.05</td>
<td>-.10</td>
<td>.01</td>
<td>-.50</td>
</tr>
</tbody>
</table>

### TABLE II

**SIGNIFICANCE OF DIFFERENCE IN MEANS**  
**SCALE OF BELIEFS 4.21 and 4.31**  
**POST-TEST RESULTS**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N 60)</td>
<td>66.15</td>
<td>10.9</td>
<td>22.6</td>
<td>36.06</td>
</tr>
<tr>
<td>Goddard College, Group A (N 23)</td>
<td>73.95</td>
<td>14.6</td>
<td>11.0</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>t-scores</strong></td>
<td>2.22</td>
<td>1.37</td>
<td>4.83</td>
<td>2.52</td>
</tr>
<tr>
<td><strong>Level of Significance</strong></td>
<td>.05</td>
<td>-.50</td>
<td>.01</td>
<td>.02</td>
</tr>
</tbody>
</table>
### Table III

**Significance of Difference in Means**
**Scale of Beliefs 4.21 and 4.31**
**Ohio State University N 60**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Test Means</strong></td>
<td>61.7</td>
<td>13.8</td>
<td>24.4</td>
<td>40.2</td>
</tr>
<tr>
<td><strong>Post-Test Means</strong></td>
<td>66.15</td>
<td>10.9</td>
<td>22.6</td>
<td>36.06</td>
</tr>
<tr>
<td><strong>t-scores</strong></td>
<td>5.65</td>
<td>2.4</td>
<td>1.7</td>
<td>2.76</td>
</tr>
<tr>
<td><strong>Level of Significance</strong></td>
<td>.01</td>
<td>.02</td>
<td>-.05</td>
<td>.01</td>
</tr>
</tbody>
</table>

### Table IV

**Significance of Difference in Means**
**Scale of Beliefs 4.21 and 4.31**
**Goddard College Group A N 23**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-Test Means</strong></td>
<td>66.6</td>
<td>15.8</td>
<td>17.76</td>
<td>39.75</td>
</tr>
<tr>
<td><strong>Post-Test Means</strong></td>
<td>73.95</td>
<td>14.63</td>
<td>11.00</td>
<td>28.6</td>
</tr>
<tr>
<td><strong>t-scores</strong></td>
<td>3.25</td>
<td>.75</td>
<td>6.85</td>
<td>5.77</td>
</tr>
<tr>
<td><strong>Level of Significance</strong></td>
<td>.01</td>
<td>-.10</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>
### TABLE V
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
Goddard College Group B N13

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST MEANS</td>
<td>81.3</td>
<td>13.1</td>
<td>5.67</td>
<td>22.70</td>
</tr>
<tr>
<td>POST-TEST MEANS</td>
<td>89.46</td>
<td>5.89</td>
<td>4.66</td>
<td>14.15</td>
</tr>
<tr>
<td>t-scores</td>
<td>3.5</td>
<td>2.99</td>
<td>1.87</td>
<td>2.8</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>.02</td>
<td>.10</td>
<td>.02</td>
</tr>
</tbody>
</table>

### TABLE VI
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
PRE-TEST RESULTS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OHIO STATE UNIVERSITY (N 60)</td>
<td>61.7</td>
<td>13.8</td>
<td>24.4</td>
<td>40.2</td>
</tr>
<tr>
<td>Goddard College, Group B (N 13)</td>
<td>81.3</td>
<td>13.1</td>
<td>5.57</td>
<td>22.7</td>
</tr>
<tr>
<td>t-scores</td>
<td>6.33</td>
<td>.25</td>
<td>8.5</td>
<td>5.51</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>-.50</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>
### TABLE VII
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
POST-TEST RESULTS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N=60)</td>
<td>66.15</td>
<td>10.9</td>
<td>22.6</td>
<td>36.06</td>
</tr>
<tr>
<td>Goddard College, Group B (N=13)</td>
<td>89.46</td>
<td>5.88</td>
<td>4.65</td>
<td>14.15</td>
</tr>
<tr>
<td>t-scores</td>
<td>7.22</td>
<td>1.74</td>
<td>6.68</td>
<td>6.49</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>-.05</td>
<td>.01</td>
<td>.01</td>
</tr>
</tbody>
</table>

### TABLE VIII
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
GODDARD COLLEGE GROUP C (N=8)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST MEANS</td>
<td>75.6</td>
<td>15.37</td>
<td>9.0</td>
<td>29.75</td>
</tr>
<tr>
<td>POST-TEST MEANS</td>
<td>78.75</td>
<td>15.8</td>
<td>5.87</td>
<td>27.50</td>
</tr>
<tr>
<td>t-scores</td>
<td>1.27</td>
<td>.16</td>
<td>2.02</td>
<td>.65</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.50</td>
<td>-.50</td>
<td>.10</td>
<td>-.50</td>
</tr>
</tbody>
</table>
### Table IX

**Significance of Difference in Means**

**Scale of Beliefs 4.21 and 4.31**

**Pre-Test Results**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N 60)</td>
<td>61.7</td>
<td>13.8</td>
<td>24.4</td>
<td>40.2</td>
</tr>
<tr>
<td>Goddard College, Group C (N 8)</td>
<td>75.6</td>
<td>15.37</td>
<td>9.0</td>
<td>29.75</td>
</tr>
<tr>
<td>t-scores</td>
<td>3.33</td>
<td>-.40</td>
<td>5.26</td>
<td>2.47</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>-.50</td>
<td>.01</td>
<td>.02</td>
</tr>
</tbody>
</table>

### Table X

**Significance of Difference in Means**

**Scale of Beliefs 4.21 and 4.31**

**Post-Test Results**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N 60)</td>
<td>66.15</td>
<td>10.9</td>
<td>22.6</td>
<td>36.06</td>
</tr>
<tr>
<td>Goddard College Group C (N 8)</td>
<td>78.75</td>
<td>15.8</td>
<td>8.87</td>
<td>27.50</td>
</tr>
<tr>
<td>t-scores</td>
<td>2.7</td>
<td>2.47</td>
<td>4.97</td>
<td>1.63</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>.02</td>
<td>.01</td>
<td>.10</td>
</tr>
</tbody>
</table>
### TABLE XI
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
GODDARD COLLEGE GROUP D N 11

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-TEST MEANS</td>
<td>79.45</td>
<td>10.95</td>
<td>9.59</td>
<td>27.09</td>
</tr>
<tr>
<td>POST-TEST MEANS</td>
<td>85.86</td>
<td>6.86</td>
<td>7.27</td>
<td>17.7</td>
</tr>
<tr>
<td>t-scores</td>
<td>4.27</td>
<td>2.02</td>
<td>2.07</td>
<td>6.30</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.02</td>
<td>.10</td>
<td>.10</td>
<td>.01</td>
</tr>
</tbody>
</table>

### TABLE XII
SIGNIFICANCE OF DIFFERENCE IN MEANS
SCALE OF BELIEFS 4.21 and 4.31
PRE-TEST RESULTS

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohio State University (N 60)</td>
<td>61.7</td>
<td>13.8</td>
<td>24.4</td>
<td>40.2</td>
</tr>
<tr>
<td>Goddard College, Group D (N 11)</td>
<td>79.45</td>
<td>10.35</td>
<td>9.59</td>
<td>27.09</td>
</tr>
<tr>
<td>t-scores</td>
<td>5.4</td>
<td>.38</td>
<td>5.7</td>
<td>4.1</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>.50</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>------</td>
<td>-----</td>
<td>------</td>
<td>--------</td>
</tr>
<tr>
<td>Ohio State University (N 60)</td>
<td>66.15</td>
<td>10.9</td>
<td>22.6</td>
<td>36.06</td>
</tr>
<tr>
<td>Goddard College, Group D (N 8)</td>
<td>65.86</td>
<td>6.86</td>
<td>7.27</td>
<td>17.7</td>
</tr>
<tr>
<td>t-scores</td>
<td>5.38</td>
<td>1.26</td>
<td>5.27</td>
<td>4.8</td>
</tr>
<tr>
<td>Level of Significance</td>
<td>.01</td>
<td>.50</td>
<td>.01</td>
<td>.01</td>
</tr>
<tr>
<td>Score</td>
<td>Correct Grade</td>
<td>Beyond Incon-</td>
<td>Grade</td>
<td>Nature of Predicate, No.</td>
</tr>
<tr>
<td>-------</td>
<td>---------------</td>
<td>----------------</td>
<td>-------</td>
<td>--------------------------</td>
</tr>
<tr>
<td>3.01</td>
<td>7.8</td>
<td>6.33</td>
<td>1.92</td>
<td>7.75</td>
</tr>
<tr>
<td>3.01</td>
<td>7.0</td>
<td>6.25</td>
<td>2.07</td>
<td>7.22</td>
</tr>
<tr>
<td>3.01</td>
<td>8.6</td>
<td>6.93</td>
<td>2.07</td>
<td>7.22</td>
</tr>
<tr>
<td>3.01</td>
<td>8.4</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
</tr>
<tr>
<td>3.01</td>
<td>8.2</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
</tr>
<tr>
<td>3.01</td>
<td>8.0</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
</tr>
<tr>
<td>3.01</td>
<td>7.8</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
</tr>
<tr>
<td>3.01</td>
<td>7.6</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
</tr>
<tr>
<td>3.01</td>
<td>7.4</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
</tr>
</tbody>
</table>

TABLE XV

<table>
<thead>
<tr>
<th>Score</th>
<th>Correct Grade</th>
<th>Beyond Incon-</th>
<th>Grade</th>
<th>Nature of Predicate, No.</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.01</td>
<td>7.8</td>
<td>6.33</td>
<td>1.92</td>
<td>7.75</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>7.0</td>
<td>6.25</td>
<td>2.07</td>
<td>7.22</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>8.6</td>
<td>6.93</td>
<td>2.07</td>
<td>7.22</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>8.4</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>8.2</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>8.0</td>
<td>6.93</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>7.8</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>7.6</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
<tr>
<td>3.01</td>
<td>7.4</td>
<td>6.33</td>
<td>2.34</td>
<td>5.47</td>
<td>3.01</td>
</tr>
</tbody>
</table>

TABLE XVI
<table>
<thead>
<tr>
<th>Post-Test Results</th>
<th>Level of Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>( t )-score ( 5 )</td>
<td>( 5.45 )</td>
</tr>
<tr>
<td>( t )-score ( 3 )</td>
<td>( 4.6 )</td>
</tr>
<tr>
<td>( t )-score ( 1 )</td>
<td>( 3.2 )</td>
</tr>
<tr>
<td>( t )-score ( 0.1 )</td>
<td>( 2.92 )</td>
</tr>
<tr>
<td>( t )-score ( 0.05 )</td>
<td>( 2.33 )</td>
</tr>
<tr>
<td>( t )-score ( 0.01 )</td>
<td>( 1.65 )</td>
</tr>
<tr>
<td>( t )-score ( 0.001 )</td>
<td>( 1.34 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
<th>Corrected Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
<td>( 25.7 )</td>
</tr>
<tr>
<td>Score</td>
<td>Correct</td>
<td>Beyond</td>
</tr>
<tr>
<td>-------</td>
<td>---------</td>
<td>--------</td>
</tr>
<tr>
<td>117.46</td>
<td>36.95</td>
<td>7.46</td>
</tr>
</tbody>
</table>

**TABLE VI**

**SIGNIFICANCE OF DIFFERENCE IN MEANS**

<table>
<thead>
<tr>
<th>Score</th>
<th>Correct</th>
<th>Beyond</th>
<th>Over</th>
<th>Incon-</th>
<th>Incorrect System</th>
<th>Question Percentage</th>
<th>Total</th>
<th>&quot;II&quot;</th>
<th>Goodward College Group D</th>
<th>Pre-Test and Post-Test</th>
<th>Nature of Proof</th>
<th>Post-Test Means, No. 1 28.4.62</th>
<th>Pre-Test Means, No. 6 84.1.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>117.46</td>
<td>36.95</td>
<td>7.46</td>
<td>7.86</td>
<td>31.08</td>
<td>8.36</td>
<td>2.63</td>
<td>71.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TABLE VII**

**SIGNIFICANCE OF DIFFERENCE IN MEANS**

<table>
<thead>
<tr>
<th>Score</th>
<th>Correct</th>
<th>Beyond</th>
<th>Over</th>
<th>Incon-</th>
<th>Incorrect System</th>
<th>Question Percentage</th>
<th>Total</th>
<th>&quot;III&quot;</th>
<th>Goodward College Group D</th>
<th>Pre-Test and Post-Test</th>
<th>Nature of Proof</th>
<th>Post-Test Means, No. 1 28.4.62</th>
<th>Pre-Test Means, No. 6 84.1.66</th>
</tr>
</thead>
<tbody>
<tr>
<td>117.46</td>
<td>36.95</td>
<td>7.46</td>
<td>7.86</td>
<td>31.08</td>
<td>8.36</td>
<td>2.63</td>
<td>71.95</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>Total</td>
<td>Correct</td>
<td>Grade</td>
<td>Beyond</td>
<td>Over</td>
<td>Incon-</td>
<td>Data</td>
<td>Beyond</td>
<td>Incon-</td>
<td>Correct</td>
<td>Grade</td>
<td>Beyond</td>
<td>Over</td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
<td>--------</td>
<td>------</td>
<td>--------</td>
<td>--------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
<td>20</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24.1</td>
<td>66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40.55</td>
<td>55</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50.5</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table XX**

Post-Test Results

Nature of Product: No. 9

Significance of Difference in Means
<table>
<thead>
<tr>
<th>Score</th>
<th>Correct Grade</th>
<th>Correct Errors</th>
<th>Data Beyond</th>
<th>Data Over</th>
<th>Incon - 11mo</th>
<th>Citation of Errors</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0-0.5</td>
<td>1.17</td>
<td>1.17</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
<td>0.49</td>
</tr>
<tr>
<td>0.6-1.0</td>
<td>1.30</td>
<td>1.30</td>
<td>0.54</td>
<td>0.54</td>
<td>0.54</td>
<td>0.54</td>
<td>0.54</td>
</tr>
<tr>
<td>1.1-1.5</td>
<td>1.46</td>
<td>1.46</td>
<td>0.69</td>
<td>0.69</td>
<td>0.69</td>
<td>0.69</td>
<td>0.69</td>
</tr>
<tr>
<td>1.6-2.0</td>
<td>1.62</td>
<td>1.62</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
<td>0.85</td>
</tr>
<tr>
<td>2.1-2.5</td>
<td>1.78</td>
<td>1.78</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
<td>1.01</td>
</tr>
</tbody>
</table>

Post-Test Results
Nature of Product, No. 6
Significance of Difference in Means
Table XXII
A SCALE OF BELIEFS

1. Complete freedom of speech should be given to all groups and all individuals regardless of how radical their political views are.

2. All laws and bills which do not conform strictly to the Constitution should be declared illegal by the courts.

3. We should buy foreign products only when American goods are not available.

4. American business men who have put money into developing the natural resources in backward countries have a right to expect special privileges from those countries.

5. The provisions in our present Constitution should not be fundamentally changed.

6. As a rule a war brings economic benefits to the winning nation.

7. On the whole, wars and preparation for war develop in people such qualities as sturdy manliness, courage, and loyalty to one's fellows.

8. If the interests of our country clash with the interests of humanity throughout the world, our first loyalty should be to humanity rather than to our country.

9. The men most deserving of our admiration are the soldiers and their leaders who have fought for their country.

10. In most cases, a citizen renders greater service to his country when he struggles for social justice for his fellow citizens than when he goes to war in defense of his country.

11. It is the responsibility of a good citizen to obey without protest all laws no matter how unreasonable they may seem to him.

12. Poverty and unemployment could be eliminated if the problem were attacked intelligently.

13. The best of medical care should be provided for rich and poor alike.
14. Most workers who are unable to provide for themselves during a period of unemployment have been too shiftless to save.

15. An individual is justified in opposing measures to provide for relief, health facilities, and other community needs, which would increase his taxes.

16. Public regulation of business and industry is necessary in order to protect the interests of the general public.

17. The wealth of our nation would permit a higher standard of living for the masses of American people if there was more public control of business and industry.

18. War results in the development of a race of people who are physically inferior.

19. Such services as gas and electricity can be provided most economically through private ownership and control.

20. Since the welfare of a whole nation depends on its natural resources, their use should be subject to public control.

21. Given an equal chance, the Negroes can be as successful as the white people.

22. It is so expensive for society to care for all the unemployed that the amount spent for unemployment relief should be greatly reduced.

23. Negroes should be allowed to go anywhere white people go.

24. Most American workers are paid a decent living wage.

25. All positions in the political and economic world should be open to any man with the ability to fill them, regardless of race.

26. The opportunities which individuals have today are determined more by social and economic position than by their ability.

27. All governmental employees should be chosen on the basis of ability and merit as determined by examinations.

28. Strict immigration laws should be passed so as to keep America for Americans only.
29. The problems of our times can be satisfactorily solved under a democratic form of government.

30. Those who have more should be taxed to contribute to the welfare of those who have less.

31. Military training should be required of all able-bodied men.

32. Most foreigners make undesirable American citizens.

33. A man who is sincerely against war should not be made to fight.

34. We should keep all alien ideas out of America.

35. The amount of profit made from the sale of war materials should be strictly limited.

36. An employer has a right to consider the personal and political beliefs of workers in selecting and promoting them.

37. Employers should contribute to unemployment insurance.

38. Every person should have police protection and orderly trial no matter what crime he is accused of.

39. The public should not be taxed to give college education to those who cannot pay for it.

40. Equal consideration should be given to the welfare of every person regardless of how much wealth he may have.

41. Industries which do not make a profit should be permitted to close down even though the public needs the materials produced by these industries.

42. Only when spurred on by the profit motive and competition can men be stimulated to their best efforts.

43. Military preparedness tends to provoke war by creating suspicion, fear, and hatred among nations.

44. The government should be granted the power to regulate the prices which an industry or business can charge.

45. If a man has the vision and ability to increase his income by profitable investment, the government should not take away in taxes a large part of these profits.
46. Most Negroes cannot profit from more than an elementary education.

47. The government should provide for the unemployed through taxation.

48. Under favorable conditions the morality of the average Negro can be equal to that of the average white man.

49. Workers should receive a larger share of the national income in return for their services to society.

50. People of the white race are superior in most respects to people of other races.

51. Decisions on all important national matters should be made by the elected representatives of the people rather than by popular vote.

52. In case of serious national emergencies (such as a depression or a war), it is desirable to grant the president dictatorial power and to limit freedom of speech and press.

53. America might profit by taking over from other countries some of their ideas in regard to government, family life, and morals.

54. Distinctions between social classes are inevitable in any society, and nothing can be done about them.

55. The United States should cooperate with other nations in an effort to preserve peace.

56. Disarmament of all nations is not desirable since there is no way other than war to settle serious international disputes.

57. International arbitration could and should replace war as a means for settling differences.

58. America should seek to promote the interests of all mankind, whether or not our country gets any economic benefits as a result of such efforts.

59. A nation is justified in going to war only when a foreign country takes steps to attack it.

60. A good citizen would never help his country to fight any war except in case of invasion.

61. Whenever a job seriously endangers the life or health of the worker, it is the employer's duty to find a safe way of getting the work done regardless of how much it costs.
62. Unemployment insurance is undesirable.

63. Democratic government, as practised in the United States, has no serious or far-reaching defects.

64. The president of the United States should always be a Protestant.

65. Since the masses of people may at times choose poor leaders, they should not be entrusted with the election of important government officials.

66. Government regulation of business activities is necessary if we are to safeguard the economic interests of the majority of our people.

67. Pacifists and conscientious objectors refuse to fight because they are cowards.

68. A business man should be free to sell any kind of product for which there is a demand.

69. War is inevitable under any kind of social system.

70. A business man should be free to say whatever he wishes in advertising his goods.

71. Negroes are naturally more inclined to be criminals than white people are.

72. All races should associate on an equal basis socially.

73. Society should provide the opportunity to work for every man who is willing to do so.

74. The contribution of the Negro race to our civilization is almost negligible.

75. It is right and natural that in hiring people a white person should be preferred to a colored one even if they are of equal ability.

76. The national government should provide insurance for its citizens against unemployment, sickness, and old age.

77. All citizens should have the right to vote on measures involving increased taxation, whether or not they own property.

78. It is very doubtful whether the American way of doing things would be best for other nations.
79. Our government ought to protect American business interests in foreign countries even if it involves the use of our army and navy.

80. A good citizen should not criticize the acts and policies of his government.

81. The lives of American citizens in foreign countries should always be protected, even if it requires the full force of our army and navy.

82. By intervening in countries like India, Africa, and the Philippines, white nations have done more harm than good.

83. Military training in schools is an excellent kind of education for boys.

84. A country which needs more land and resources to support its population is justified in fighting to obtain them.

85. The welfare of citizens should not be sacrificed for the sake of the honor or glory of the nation.

86. The federal government should strictly regulate the employment of children under 18 years of age in any business or industry.

87. The concentration of power in the hands of big business is a serious threat to democracy.

88. Labor unions should be discouraged.

89. The common people are intelligent enough to make wise decisions on important social issues.

90. Most of the people on relief today are shiftless and lazy and could secure work if they wanted to.

91. Government competition with private power companies is desirable if it causes them to reduce their rates or to increase their efficiency.

92. One of the most effective single ways of preventing wars is to abolish profits from wars.

93. Our government should violate the rights of individuals by attempting to control industry and business.

94. It would cost the taxpayers far too much to have the government help rebuild the slums.
95. Through protective laws, the government should regulate hours, wages, and conditions of work in industry and business.

96. Even though the Negroes may outnumber the whites in certain localities there should be no interference with the Negro's right to vote.

97. It is all right for Negroes to be paid lower wages than whites for similar kinds of work.

98. Relief to the unemployed should be provided mainly through private charity.

99. Both business and labor should be protected by preventing the activities of labor organizers.

100. There should be no interference with the employer's freedom to hire and lay off workers according to the needs of his business.
101. Freedom of speech should be denied all those groups and individuals that are working against democratic forms of government.

102. The Supreme Court in deciding whether a law is constitutional should consider the contribution of the law to the welfare of the people more important than its strict agreement with the Constitution.

103. In this day of economic interdependence, it is desirable that we buy goods from other nations.

104. When Americans own businesses in foreign countries, they should be expected to be treated the same as any other business in that country.

105. The Constitution should be changed as often as is necessary to meet the changing needs of our society.

106. In the long run, even the country that wins a war suffers economic losses which are greater than its gains.

107. On the whole, war appeals to low human motives and brings out what is cruel in human beings.

108. Our first loyalty is to our country rather than to humanity.

109. Men distinguished by achievements in peaceful pursuits are the real heroes of our nation.

110. A citizen renders greater service to his nation when he goes to war in defense of his country than when he struggles to maintain civil rights.

111. A good citizen should protest against laws which seem to him undemocratic or unjust.

112. No matter what social system is created, unemployment and poverty cannot be eliminated.

113. The quality of medical services made available to individuals should depend upon their ability to pay.

114. The wages of most workers are so low that it is impossible for them to save enough money to support themselves during periods of unemployment.
115. Every citizen should support measures that provide for public health facilities, relief, and other urgent community needs; even though these would increase his taxes.

116. The present tendency toward regulation of business should be halted.

117. The American system of free private enterprise, which has given us the world's highest standard of living, should not be basically changed.

118. Wars and preparation for war develop a nation of people who are physically strong and hard.

119. Private ownership of such public utilities as electricity and gas, involving duplication of transmission lines, is wasteful and cannot provide people with the best service at lowest rates.

120. Those who own oil wells, coal mines, and other natural resources should be allowed to operate them as they think best.

121. Negroes as a race are inferior and we can never hope to see them do as well as white people.

122. In the long run, it is less costly to society to furnish adequate unemployment relief than to pay for the effects of unemployment.

123. Negroes should not be allowed to go to the same hotels, restaurants, and theatres as whites.

124. The wages paid to many workers in America are too low to maintain a decent standard of living.

125. Negroes should not be allowed to fill positions involving leadership of white people.

126. In America, if people have ability they will find plenty of social, economic, and political opportunities.

127. Men who are elected to high public office should have the right to choose the employees who work in their departments.

128. The laws should be changed so as to permit a large number of foreigners to come to the United States and settle here.

129. Some of the basic problems of modern times cannot be successfully handled under a democratic form of government.
130. In a democracy one group should not be taxed to help provide for the welfare of another group.

131. Compulsory military training is not desirable.

132. Most immigrants have contributed and will contribute much to the welfare of our nation.

133. No matter what his personal beliefs regarding war, no man has the right to refuse to serve his country in times of war.

134. Our country should not reject an idea just because it is of alien origin.

135. Men should be allowed to make profits out of munition making just as they are allowed to make profits from other business enterprises.

136. The personal and political beliefs of a worker should not be permitted to affect his chances for employment and promotion.

137. Since unemployment insurance is paid to the workers, the employers should not be required to contribute to it.

138. Under certain conditions people have a right to take the law in their own hands and punish the criminal.

139. Educational opportunities which only the well-to-do can now afford should be extended to any able student even though it be at public expense.

140. Since the wealthy class is the backbone of American business and industry, the government should give their interests special consideration.

141. The government should be empowered to keep industries which provide materials necessary for the public running even though these industries make no profits.

142. In stimulating men to do good work, other motives, such as satisfaction in the work, may serve just as well or better than the desire for profits.

143. Military preparedness is the best way to keep peace.

144. A manufacturer or retailer should be permitted to charge as high a price for an article as he can get in the market.

145. It is fair to require a man who has increased his income by profitable business investments to pay in taxes a part of these profits.
146. Given the same opportunities, the average Negro can get as much from an education as the average white man.

147. The government has no right to tax the general public to provide for those who are out of work.

148. The moral standards of the Negro can never be as high as those of the white race.

149. Workers receive as large a share of the profits of industry as is warranted by the service they contribute.

150. In many respects the colored race is superior to the white race.

151. The opportunity should be provided for citizens to vote directly on important measures and bills which affect the whole nation.

152. Democratic procedures in government and freedom of speech and press should be maintained at all times.

153. The United States is far superior to most other nations in such important respects as government, educational opportunities, family life, and morals.

154. In a democracy there should be no distinctions based on social classes.

155. The United States should keep out of any entanglements with other countries.

156. If all nations disarmed, war as a method of settling international disputes would probably disappear.

157. There are many important international differences which can never be settled by arbitration.

158. In dealing with other nations we should seek always to keep the United States the wealthiest nation in the world.

159. A nation is justified in going to war at any time its leaders or the majority of its people think that it is necessary for the protection of national interests.

160. A patriotic citizen would always come to the aid of his country in fighting a war.

161. An employer should not be required to install safety devices when these greatly increase his costs.
162. Unemployment insurance should be provided for all workers.

163. Democracy as practiced in the United States is far from being ideal.

164. The religious affiliations of candidates for public office should not influence their selection.

165. In America, the leaders of the government should be chosen by the people whether or not this choice is always the best.

166. In our country, with its great economic opportunities, any individual can safeguard his own economic interests without assistance from the government.

167. It takes more courage to remain a pacifist in wartime than it takes to fight.

168. There should be rigorous government inspection of the manufacture and sale of goods in order to protect the public from harmful or inferior products.

169. The problem of preventing war is one which can be solved.

170. There should be government regulations which prevent misleading advertising.

171. Given the same economic and educational opportunities, the proportion of criminals among the Negroes will be no higher than among the whites.

172. Association of whites with Negroes on an equal social basis is undesirable.

173. It is not the duty of society to see to it that all its able-bodied members who are willing to work are able to get jobs.

174. Many fine contributions in art and music have been the work of Negroes.

175. In hiring people for any kind of work employers should not give preference to whites over Negroes of equal ability.

176. It is not the duty of the government to provide social security for its citizens.
177. Only those who own property should have the right to vote on measures involving taxation.

178. Most countries would profit greatly by adopting the American way of doing things.

179. Our government should not risk a war to protect American business interests in foreign countries.

180. It is the duty of the citizens to criticize the policies and acts of the government.

181. Our government should not protect its citizens in foreign countries when this involves armed conflict with other nations.

182. White men are right in trying to govern backward countries because the natives do not know how to govern themselves.

183. Schools should not require military training.

184. Regardless of how poor a nation is, it should not go to war to obtain the land and resources that it needs.

185. The welfare and security of the citizen is of minor consideration when the honor of the country is involved.

186. Whether or not a child under 18 is allowed to work in a business or industry should be determined by his family and the employer.

187. The contribution of big business to the development of our nation outweighs its dangers to democracy.

188. Labor unions are necessary for securing satisfactory living and working conditions for large numbers of our people.

189. The masses of the people have too little intelligence to vote wisely on important social issues.

190. Most of the unemployed are willing and able to work but cannot find jobs because of present-day economic conditions.

191. Government competition with private power companies should not be permitted.
192. Even though war brought no profits to anybody, there still would be just as many wars.

193. Governmental control of industry and business preserves the rights of more individuals than it violates.

194. The government is right in tearing down the slums and building better homes even though it costs money to taxpayers.

195. Labor laws regulating hours, wages, and conditions of work interfere unjustly with the rights of business.

196. In places where Negroes outnumber whites, there should be restrictions which would limit the influence of the Negro vote.

197. The same wages should be paid to Negroes as to whites for work which requires the same ability and training.

198. Relief to the unemployed should be provided mainly by the government.

199. Labor organizers should be free to hold meetings and to express any opinions which do not lead to law-breaking.

200. Laws and organizations which help guarantee security of employment to workers should be encouraged.
PROBLEMS IN PROOF

When we say that we have "proved" something, what do we mean? Ordinarily we mean that our conclusion is based on adequate evidence, and does not go beyond that evidence. We mean also that other important evidence has not been overlooked. If our evidence is well arranged, and if there are no loopholes in our logic, we think our proof is so much the better. We seem reasonably well satisfied with our own proof if we can "back up" our conclusion—if we can show that we are warranted in stating it.

That about the other fellow's arguments? Can we tell how reasonable his proof is? We are being subject to a steady barrage of arguments from the press and pulpit, from books and periodicals, from stage and screen, from our friends, relatives and acquaintances, from the radio and the rostrum—to believe this, to buy that, to fight for this cause and to oppose another one. In all these situations we find it necessary, and wise too, to examine the arguments, to see the relationships of what it said to the conclusion, to note any important arguments omitted, to judge the reasonableness of what has been stated, and finally to judge the reasonableness of the conclusion in the light of the evidence and the logic used. Unless we know how to carry on this process we shall be at a great disadvantage.

Some Needed Definitions

In the following examination you will need to know the meaning of the terms: FACTS AND ASSUMPTIONS.

FACTS—These statements are acceptable to you at face value, or with very minor doubts, if any. You are so sure of them that you wouldn't bother to investigate them. They seem self-evident to you.

ASSUMPTIONS—These statements are not acceptable to you at face value. You question them. You have some doubts about them. If you used them in this situation you would point out that they had not been verified so far as you know. They may be true—they may be false—you don't know. You need further information about them.

We realize that there is no sharp and clear distinction between facts and assumptions. We know that these
terms must be used in a relative sense. In this examination be guided by the definitions given above. All of your answers should be placed on the separate answer sheet. Please do not write on this booklet.

Copyright, May 1943
College of Education, the Ohio State University
Columbus, Ohio

"SPANISH-AMERICAN WAR"

A couple of college boys in New York City were discussing the great loss of life during a war. To substantiate their arguments they decided to investigate statistics concerning death rates during wars. In their researches they discovered some figures related to the Spanish-American war. In this war the death rate in New York City was 15 per thousand. In the American Navy during the same period, the death rate was 9 per thousand. From this information the boys concluded that in time of war it is safer to be a sailor in the Navy than to live in New York City.

These boys presented their arguments rather enthusiastically to a group of friends who had not yet decided upon which branch of the service they wished to enter. These friends raised many questions which appear below in the form of statements. Before reading them, PLEASE TURN TO BACK PAGE FOR DIRECTIONS.

List of Statements

1. In order to make valid comparisons of population aggregates, it is not necessary to take into account important variables such as age and physical condition of the two aggregates that influence the factor under comparison.

2. The death rate in the Navy varies considerably between officers and non-commissioned men; between men stationed in offices ashore and men in fighting ships.

3. If the boys had compared the death rate of men in the Navy and New York City who are the same age, then the conclusion would have been valid.

4. Within the Navy the death rate for sailors may be much greater than any other classification.
5. To compare the safety conditions of two different populations it is necessary to consider those factors which influence safe living, such as age, prevalent diseases, infant mortality, entrance requirements, etc.

6. The word "sailor" must be defined, for the purposes of this argument, as "anyone in the Navy."

7. This one set of data does not justify the projection of a trend.

8. Many deaths occur in time of war that have no relation to the war, itself.

9. If the death rates in the Navy had been similarly lower in World War I then the conclusion would be valid.

10. The effects of war may increase the death rate in a large city.

11. Both for New York City and the Navy, these death-rate figures are valid and reliable.

12. For the purposes of this argument, "safety" means a lower death rate.

13. It is stupid to consider "safety" and lower death rate as synonymous.

14. If health authorities, studying these same data, had come to the same conclusion, the argument of the boys would be more sound.

15. In order to prove the conclusion that it will be necessary for the same people to live both in New York City and in the United States Navy during a war period.

16. Both in New York City and in the United States Navy, the number of deaths reported during the Spanish-American War was related to that war.

17. Other wars may show the same differences in death rates between New York City and the Navy.

18. During the Spanish-American war the death rate in the Navy was 6 per thousand less than in New York City.

19. Factors other than death rates are involved in the concept of "safe living."
20. These death rate figures may not be accurate.

21. The boys found the statistics in an old book which was unreliable.

22. The relative differences between the death rates in the Navy and in New York City during the Spanish-American War are typical of differences that would be found in any war.

23. This points clearly to the need for a required course in statistics for American college youth.

24. It would be just as absurd to argue that going to bed is more dangerous because more people die there than in other places.

25. CONCLUSIONS: It is safer to be a sailor in the Navy than to live in New York City.

Directions

PART I: THE CHARACTER OF THE EVIDENCE: FACT - ASSUMPTION - NEITHER:

One way to test your own thinking in any situation is to determine what parts of the evidence are really facts, what parts are assumptions, and what statements are definitely false. What you really do, of course, is to test every argument as it relates to the conclusion. You say to yourself: "In this situation, how does this argument bear on the conclusion: is it a fact? is it an assumption? or is it pretty definitely a false statement?" You do not restrict your thinking merely to the contents of the test. In making your decisions you use all the knowledge and wisdom you possess. If you believe that a statement is NOT A FACT and that it is NOT AN ASSUMPTION, you should think of it as NEITHER.

Read each statement in the list and decide whether it is FACT, ASSUMPTION or NEITHER. Then blacken the appropriate spaces on Part I of the separate answer sheet.

PART II: THE RELATION OF EACH ARGUMENT TO THE CONCLUSION:

Another way to test a so-called "proved conclusion" is to see the relationship between each statement and the conclusion. Read carefully each statement in the test. Assuming the statement to be true, does it actually lead up to or support the conclusion? Or, assuming the state-
ment to be true, does it contradict or refute or question or throw doubt upon the conclusion? You may think that some of the statements are irrelevant: they tend neither to support nor to refute the conclusion. For each statement, blacken the appropriate space in Part II of your separate answer sheet.

PART III: RELATIVE TRUTH OR FALSEITY OF ARGUMENTS:

A third way to test a so-called proof is to appraise every statement carefully to determine whether it is true or probably true, false or probably false, or whether its relative truth or falsity is unknown to you. In the light of all the knowledge you possess what are your judgments of these 25 statements? On Part III of the separate answer sheet blacken the appropriate space for each statement.

PART IV: THE LOGICAL RELATIONSHIP BETWEEN ARGUMENTS AND CONCLUSIONS:

How well can you judge the reasonableness of a conclusion in the light of the evidence presented? In this part of the examination you are given five different sets of evidence and in each case you are asked to judge the reasonableness of the conclusion. Place your marks in the appropriate spaces on the separate answer sheet.
PROBLEMS IN PROOF

When we say that we have "proved" something, what do we mean? Ordinarily we mean that our conclusion is based upon adequate evidence, and does not go beyond that evidence. We mean also that other important evidence has not been overlooked. If our evidence is well arranged, and if there are no loop-holes in our logic, we think our proof is so much the better. We seem reasonably well satisfied with our own proof if we can "back up" our conclusion—if we can show that we are warranted in stating it.

What about the other fellow's arguments? Can we tell how reasonable his proof is? We are being subjected to a steady barrage of arguments from the press and pulpit, from books and periodicals, from stage and screen, from our friends, relatives and acquaintances, from the radio and the rostrum—to believe this, to buy that, to fight for this cause and to oppose another one. In all these situations we find it necessary, and wise too, to examine the arguments, to see the relationships of what is said to the conclusion, to note any important arguments omitted, to judge the reasonableness of what has been stated, and finally to judge the reasonableness of the conclusion in the light of the evidence and the logic used. Unless we know how to carry on this process we shall be at a great disadvantage.

This examination is concerned with your understanding of the processes of proof. The results will be discussed with you and from that discussion we hope you will profit in a way which will enrich your power in organizing your own arguments and which will help you also in analyzing the arguments of others. There is no time limit to this test. Do your very best. All of your answers should be placed on the separate answer sheet. Please do not write on this booklet.

Some Needed Definitions

In the following examination you will need to know the meaning of the terms: FACTS AND ASSUMPTIONS.

FACTS - These statements are acceptable to you at face value, or with very minor doubts, if any. You are so sure of them that you wouldn't bother to investigate them. They seem self-evident to you. In this situation they may even be irrelevant, and yet they are facts as far as you are concerned.

ASSUMPTIONS - These statements are not acceptable to you at face value. You question them. You have some doubts about them. If you used them in this situation you would point out that they had not been verified so far as you know. They may be true— they may be false—you don't know. You need further information about them. They may be relevant or irrelevant to the situation. They are assumptions so far as you are concerned.

Copyright January, 1943
College of Education, The Ohio State University, Columbus, Ohio
"THE WISCONSIN ROBBERY"

A store was robbed in Madison, Wisconsin. The robber was seen to flee from the back door of the store and into an alley. This alley had just been covered with a coat of fine sand. The kind of sand used was of a variety found only in a few places. Only one set of tracks was found in the sand. A few hours later, a suspect was arrested. His shoes were taken and the sand carefully removed from them. When measured with suitable apparatus by a scientist, the index of refraction of a sample of the sand taken from the suspect's shoes and of a sample of the sand taken from the alley were found to be the same. The suspect was brought to trial. He pleaded not guilty. The evidence above was presented. After deliberating for some time, the jury concluded that the suspect was guilty.

Now turn to back page for directions.

List of Statements

1. The suspected man had never been at any place other than in this alley where he could get that particular kind of sand on or in his shoes.

2. The "wear and tear" of walking, the pressure of the man's weight on the sand in his shoes, are factors which tend to change the index of refraction.

3. These two sands have the same index of refraction but even so, the sand in the man's shoes is not the same kind of sand as was in the alley.

4. The suspected man may have got the sand in his shoes before the robbery was committed.

5. The suspected man got this particular kind of sand in his shoes from some place other than this particular alley.

6. The index of refraction of sand is not influenced by pressure of a man's weight or by the "wear and tear" involved in walking.

7. The index of refraction of a substance cannot be determined with sufficient accuracy to be a reliable measurement. Different people, even different experts, would get significantly different results from the same sample.

8. Someone else wore the shoes of the suspected man or placed the sand in his shoes.

9. If no one else wore the suspected man's shoes, and if there was only one set of tracks in the alley, then he is guilty.

1When rays of light enter many different substances (grains of sand, for example) at an angle, the rays appear to bend and travel at a new angle. By suitable apparatus, these angles can be measured and a number called the index of refraction can be found for each substance.
10. The sand that was found in the suspected man's shoes may have come from some place other than this particular alley.

11. The tracks in the sand were made by the person who committed the robbery.

12. Wherever two samples of sand are found to have the same index of refraction, the two sands are identical.

13. The conclusion would be true if the scientist had repeated his procedures on several samples of sand taken from the suspect's shoes and if he always got the same results.

14. The index of refraction of the sample of sand from the suspect's shoes and of the sample of sand from the alley were found to be the same.

15. The sand in the suspected man's shoes may have been affected by "wear and tear" and by the pressure of his weight.

16. No one else had ever worn the suspected man's shoes or had access to them.

17. If there was only one set of tracks in the sand, and if the index of refraction of the sand taken from the suspect's shoes and the index of refraction of the sand taken from the alley are the same, then the suspect is guilty.

18. If several samples of the sand found in the alley had been analyzed different indexes of refraction would have been found.

19. Having the same index of refraction does not insure the identity of two samples of sand.

20. If the sand in the suspected man's shoes had an index of refraction different from the sand in the alley, then he would not be guilty.

21. The tracks in the sand were made by one of the persons who spread the sand in the alley.

22. An index of refraction is a quality of a substance which can be known with a high degree of scientific accuracy and it is not a fluctuating, changing, flighty quality which varies significantly when measured by different experts.

23. This alley had just been covered with a fresh coat of fine sand and only one set of tracks was found in the alley.

24. If we accept this description of the situation as true, then we must also agree that the suspected man is guilty.

CONCLUSION:

25. The suspected man is guilty.
Directions

PART I

THE CHARACTER OF THE EVIDENCE: FACT - ASSUMPTION - NEITHER:

One way to test your own thinking in any situation is to determine what parts of the evidence are really facts, what parts are assumptions, and what statements are definitely false. You may believe that the man is guilty; you may believe that he is not guilty or you may be uncertain about it. In the light of your own personal conclusion and in the light of any additional information you may possess, what are your judgments about each statement in the list? If you believe that a statement is not a fact, and that it is not an assumption, you may think of it as "neither."

Read each statement in the list and decide whether it is Fact, Assumption, or Neither. Then blacken the appropriate spaces on Part I of the separate answer sheet.

PART II

THE RELATION OF EACH ARGUMENT TO THE CONCLUSION:

Another way to test a so-called "proved conclusion" is to see the relationship between each statement and the conclusion. Read carefully each statement in the test. Assuming the statement to be true, does it actually lead up to or support the conclusion? Or, assuming the statement to be true, does it contradict or refute or question or throw doubt upon the conclusion? You may think that some of the statements are irrelevant: they tend neither to support nor to refute the conclusion. For each statement, blacken the appropriate space in Part II of your separate answer sheet.

PART III

RELATIVE TRUTH OR FALSITY OF ARGUMENTS:

A third way to test a so-called "proof" is to appraise every statement carefully to determine whether it is true or probably true, false or probably false, or whether its relative truth or falsity is unknown to you. In the light of all the knowledge you possess what are your judgments of these 25 statements? On Part III of the separate answer sheet blacken the appropriate space for each statement.

PART IV

THE LOGICAL RELATIONSHIPS BETWEEN ARGUMENTS AND CONCLUSION:

How well can you judge the reasonableness of a conclusion in the light of the evidence presented? In this part of the examination you are given five different sets of evidence and in each case you are asked to judge the reasonableness of the conclusion. Place your marks in the appropriate spaces on the separate answer sheet.
"RICE AND PIGEONS"*

A disease which results in certain nervous disorders was common among the population of certain sections of the Orient where the diet consisted chiefly of white rice. People whose diet was chiefly brown rice were not afflicted with this disease. To find out whether or not the disease was related to the diet, a group of scientists conducted the following experiment. "One hundred healthy pigeons were placed in separate cages. Fifty pigeons (Group I) were fed nothing but white rice and distilled water. The remaining fifty pigeons (Group II) were fed nothing but brown rice and distilled water. Within two weeks, the pigeons of Group I began to show symptoms of nervous disorders. When their diet was changed to brown rice, the pigeons of Group I showed immediate improvement and were well in a few days. The pigeons of Group II remained well throughout the experiment." The scientists concluded that a change from a diet consisting chiefly of white rice to one consisting chiefly of brown rice would reduce the occurrence (incidence) of the nervous disorders among these Oriental people.

In the Department of Home Economics a group of students studying dietetics discussed this experiment and raised a rather large number of questions which they thought had important bearing upon the conclusion. Before you read the statements, PLEASE TURN TO BACK PAGE FOR DIRECTIONS.

List of Statements

1. The diet of the Oriental peoples contained many other factors besides rice that are significant in terms of preventing or facilitating the development of nervous disorders.

2. The same remedy which would correct a nervous disorder in pigeons would also correct a nervous disorder in Oriental people.

3. If the scientists had repeated their experiment on several groups of pigeons and always secured the same result, the conclusion would be true.

* Definition of terms and the directions are the same for Nature of Proof No. 5 as for Nature of Proof No. 6.
4. So far as nervous disorders are concerned, the pigeons in Group I may have been less healthy than the pigeons in Group II before the experiment was begun.

5. White rice is the major factor in the diet of the Oriental people that is significant in terms of the nervous disorders which they reveal.

6. A remedy prescribed as appropriate for a nervous disorder in pigeons would not be appropriate as a remedy for nervous disorders among Oriental people.

7. The nervous disorders developed by the pigeons were equivalent to the nervous disorders developed by the Oriental peoples.

8. The two groups of pigeons were comparable in terms of those factors which affect the onset of nervous disorders.

9. If the group of pigeons fed exclusively on brown rice developed no symptoms of the nervous disorders, then a change to a diet of brown rice would reduce the incidence of the disorders among the Oriental peoples.

10. The white rice fed to the pigeons in Group I may have been different in quality from the white rice eaten by the Oriental peoples.

11. The effect of diet on the complex human nervous system is influenced by many different, significant factors and cannot properly be compared with the effects of the same diet on a different kind of nervous organization, such as that of pigeons.

12. A single factor such as the presence of white rice in the diet is not the sole cause of a nervous disorder.

13. If the group of pigeons fed exclusively on white rice had not developed symptoms of nervous disorders, we could be sure that a change in diet from white rice to brown rice would have no effect on the incidence of nervous disorders among the Oriental peoples.

14. There may have been some factor other than the diet, the presence of certain microbes in the cages, differences in the ways in which the pigeons were handled, conditions of ventilation, etc., which affected the health of the pigeons in Group I.
15. If they wanted to draw conclusions about Oriental people these scientists should have experimented with two groups of Oriental people, not two groups of pigeons.

16. The two groups of pigeons were not comparable in terms of susceptibility to the nervous disorder.

17. It would be just as reasonable to argue that you could find out how to treat nervous disorders in pigeons by placing a group of men on a diet of bird seed and water.

18. If we accept this description of the work of the scientists as true, and if we can assume that they were experts in the study of nutrition, then we must agree that the conclusion is true.

19. The addition of rice to the diet was the only cause of the change in the nervous condition of the pigeons.

20. "The cock crowed; the sun came up and therefore it was the crowing that did it." Sick pigeons got well after being fed brown rice so the brown rice did it. This is the old logical fallacy, "Post hoc, ergo propter hoc."

21. The effects of diet on nervous disorders of human beings can be predicted from the effects of the same diet on the nervous disorders of pigeons.

22. The nervous disorders developed by pigeons under conditions of extremely limited diet (white rice with distilled water) were not equivalent to the nervous disorders developed by the Oriental peoples.

23. If the pigeons were all equally healthy at the start of the experiment, and if the effect of diet on pigeons is comparable to the effect of diet on human beings, (so far as nervous disorders are concerned) then the conclusion is true.

24. The nervous disorder in the pigeons may have been caused by the diet of white rice, but even so, the nervous disorders of the Oriental peoples may not have been due to the same cause.

25. **CONCLUSION:** A change from a diet consisting chiefly of white rice to one consisting chiefly of brown rice would reduce the occurrence of the nervous disorders among these Oriental peoples.
"GRADES"

Two students, A. and B., each wrote a composition and the two papers were graded by ten different teachers selected at random from all the teachers in a large city. In grading the two papers, the teachers used the percentage system. The scores on Paper A ranged from 75 per cent to 95 per cent, and on Paper B, from 25 per cent to 75 per cent. From these facts it was concluded that teachers will differ widely in estimating the quality of the same composition paper.

A group of students who were preparing to become teachers discussed this experiment at some length. In their discussion the following arguments came up for consideration. Before you read the statements PLEASE TURN TO BACK PAGE FOR DIRECTIONS.

List of Statements

1. For the purposes of this study ten teachers selected at random from all the teachers in a large city constitute an adequate sample of all teachers.

2. In order to draw the conclusion, we need a more precise measure of variation such as the distribution of scores around the mean.

3. There may have been much more agreement among these ten teachers than was reflected in the scores.

4. If these different teachers differed 20 per cent or more in grading the two papers, then we may be sure that teachers in general will differ widely in estimating the quality of a written composition.

5. Ten teachers selected at random from all the teachers in a single large city are more experienced and better trained than teachers in general.

6. For the purposes of the argument, the range in percent scores is the only index of agreement or difference that is needed here.

7. The two composition papers used in the experiment are not representative of all such papers in terms of variability of scoring.

* Definition of terms and the directions are the same for Nature of Proof 5 as for Nature of Proof 6.
8. Considering the large variation in written compositions a disagreement of 20 per cent in scoring the same paper is not a "wide" difference.

9. Teachers either tend to differ widely in estimating the quality of written compositions, or they do not. Clearly these ten teachers differed widely among each other; hence, the conclusion is true.

10. The two papers used in the experiment may have been uniquely complex and difficult to estimate in terms of quality.

11. The percent score meant about the same thing to all ten teachers, i.e., assuming two teachers agreed very well as to the quality of a theme, they would both give it the same or nearly the same score.

12. The ten teachers carried on the process of grading these two themes with practically the same conscientiousness and care which might be expected from teachers generally.

13. If we agree that the two composition papers used in the experiment are typical of student papers in general, we must agree that teachers will tend to differ widely in estimating the quality of such papers.

14. The experiment only demonstrates the incompetency in grading papers of the ten teachers who were selected.

15. If we accept a difference of 20 per cent or more as a "wide" difference, and if we assume that agreement as to quality is reflected in agreement as to score, we are forced to conclude that teachers will differ widely in estimating the quality of the same composition papers.

16. A difference of 20 per cent or more in the grading of a theme is a "wide" difference.

17. If we agree that the assumptions made by the experimenters are tenable, then we must accept their conclusion.

18. The teachers should have used the letter system of grading in order to afford a more valid measure of agreement or disagreement.
19. These ten teachers devoted less attention and less care to the process of grading the two papers used in the experiment than might be expected from teachers generally.

20. The "range" may be an inadequate measure for the purposes of this experiment.

21. The per cent score did not mean the same thing to all teachers. Even exact agreement as to quality would not result in identical scores.

22. The two composition papers used in the experiment are typical of all such papers in the sense that the range of grades given to them may reasonably be assumed to be typical of the range of grades given to any other paper under similar circumstances.

23. If the teachers did a conscientious job of grading the papers, the conclusion drawn from the experiment is valid.

24. The attitude of the teachers toward the experimental papers may have been somewhat antagonistic, resulting in less careful attention to the job than might be expected in a normal grading situation.

25. **CONCLUSION:** Teachers differ widely in estimating the quality of the same composition paper.
BIBLIOGRAPHY

Bode, Boyd H. *Conflicting Psychologies Of Learning*
N. Y., D. C. Heath and Company, 1929

Bode, Boyd H. *Fundamentals Of Education*
N. Y. Macmillian Company, 1921

Bode, Boyd H. *Progressive Education At The Crossroads*
N. Y. Newson and Company, 1938

Curti, Margaret Child *Psychology*
N. Y. Longmans, Green and Company, 1940

Dewey, John *Democracy And Education*
N. Y. Macmillian Company, 1939

Dewey, John *Experience And Education*
N. Y. Macmillian Company, 1938

Garrett, Henry E. *Statistics In Psychology And Education*
N. Y. Longmans, Green and Company, 1947

Lindquist, E. F. *Statistical Analysis In Educational Research*
N. Y. Houghton Mifflin Company, 1940

McGeoch, John A. *The Psychology Of Human Learning*
N. Y. Longmans, Green and Company, 1942

Moulton, Harold G. *Income And Economic Progress*
Washington, D. C. National Home Library Foundation, 1938

78th Congress, First Session, Senate Document No. 40
*Markets After The War*
AUTobiography

I, Lawrence Eugene Metcalf, was born in Dennison, Ohio on September 30, 1915. I attended the public schools of Uhrichsville, Ohio from 1921 to 1933, graduating from high school in May 1933. In the autumn of 1936 I entered the College of Education at The Ohio State University. In 1940 I received the degree, Bachelor of Science in Education from The Ohio State University. In the summer of 1941 I taught the social studies at the Boy's Industrial School at Lancaster, Ohio. In the fall of 1941 I took a position at Midvale, Ohio teaching in the high school. In the summer of 1943 I entered the graduate school at The Ohio State University. I taught the social studies and was principal of the high school at Lexington, Ohio during the year 1943-44. In the fall of 1944 I accepted a position as research assistant in the Bureau of Educational Research at The Ohio State University. In the spring of 1945 I received the degree, Master of Arts, from The Ohio State University. I left the university in the autumn of 1946 in order to accept a position at Goddard College in Plainfield, Vermont. At the present time I am on the staff of the University of Georgia working with the Atlanta Area Teacher Education Service at Emory University, Georgia.