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BOSTON UNIVERSITY

GRADUATE SCHOOL

Thesis

A SURVEY OF FUPILS ' INTERESTS IN PLANTS AND ANIMALS AT THE NINTH GRADE LEVEL

Submitted by

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(B.S., Providence College, 1952)

Submitted in partial fulfillment of the requirements

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1953

A. M. 1953 Kr

Approved by × First Reader ņ Professor of Education allylie Stanes Second Reader Professor of Education

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CHAPTER I

STATEMENT OF THE PROBLEM

This is a survey of pupils' interests in plants and animals at the ninth grade level.

Collins" says "It has long been an axiom in education that pupils learn more easily and more readily those things in which they are interested." What could be better than to find out the interests of students who in a year or two will be taking a

biology course? 2/ Collins continues:

> "Therefore, it seems legitimate for the sake of better, more dynamic and more fruitful teaching of junior high school science to investigate and tabulate their preferences so that most effort may be expended by the teacher on those divisions of the subject which will appeal to them and which they can most readily make integral parts of their living experience."

Why not investigate possible future biology students and apply this idea to a biology course? Cannot the teacher plan classroom and science fair projects on the basis of interests of students?

1/Frank J. Collins, Preferences and Interests of Pupils in Junior High Science Classes, Unpulished Master's Thesis, School of Education, Boston University, Boston, Massachusetts, 1949, p. 1.

2/Ibid., p. 1.

Dewey states:

"I know of no more demoralizing doctrine-when taken literally-- than the assertion of some of the opponents of interest that after subject matter has been selected, then the teacher should make it interesting. This combines in itself two thoroughgoing errors. On one side, it makes the selection of subjectmatter a matter quite independent of the question of interest-- that is to say of the child's native urgencies and needs; and, further, it reduces Method in instruction to more or less external and artificial devices for dressing up unrelated materials, so that they will get some hold upon attention."

<u>Purpose of the study</u>-- The purpose of the study is to determine whether the pupils at the ninth grade level prefer to learn about plants or animals. Second, the purpose is to make a list of what the pupils would like to know about plants and animals in the order of rank established by those investigated in the study.

Justification -- The writer failed to uncover any studies that determine whether or not ninth grade students are more interested in plants or in animals.

Furthermore, since the last study to determine whether pupils at any junior high school grade level are more interested in plants or in animals was done thirty-two years ago by Finley,

1/John Dewey, Interests and Bffort in Education, Houghton Mifflin Company, Boston, 1913, p. 23.

2/C. W. Finley, "Some Studies of Children's Interests in Science Materials," <u>School Science and Mathematics</u>, XXI: 1-24, January, 1921. The writer feels that Finley's study is obsolete. Finely found that students in grades three to eight were more interested in animals than in plants. The writer will attempt to determine whether or not this interest has changed by surveying a number of ninth grade classes in New England and finding the percentage of plant and animal interests.

We realize that the study of both plants and animals in a high school biology course is important. If the teacher knows that there is little interest in important areas in the plant and animal kingdoms, he can be prepared to modify his teaching.

A consideration of what educators think about interests will indicate the value of an interest study.

Concerning interest Dewey writes, "It is the sole guarantee of attention."

Billett defines interest as, "That relationship between the pupil's present tendencies toward and capacities for behavior, and the immeditate goal toward which he is working."

1/0p. cit. p. 1.

2/Roy O. Billett, Fundamentals of Secondary School Teaching, Houghton Mifflin Company, Boston, 1940, p. 112. Jones defines interest as, "A feeling of liking associated with a reaction, either actual or imagined, to a specific thing or situation."

Dawson points out the importance of discovering the interests of pupils and using this knowledge in the planning of teaching materials and procedures:

> "It is assumed that effective beaching is based on the psychological principle that learning is most functional and economical in a lifelike situation which, to the learner seems vital and worthwhile. To ascertain the natural interests of young children is therefore an important step in the planning of the curriculum."

In considering the permanence of interests and the relation of present interests to past experiences, Kingsley remarks, "Interest is also related to one's past experience and abilities already developed."

1/Arthur J. Jones, Principles of Guidance, McGraw-Hill Book Company, Inc., New York, 1945, p. 191.

2/Mildred A. Dawson, "Preferences for Conversational Topics," Elementary School Journal, 37:429-437, (February, 1937), p. 429.

3/Howard L. Kingsley, The Nature and Condition of Learning, Prentice-Hall Inc., New York, 1946, p. 101. Zim states, "If one defines 'permanence' of interest in terms of educational potentialities, it is evident that these interests are permanent enough to warrant consideration in the science curricala."

Billett reports, "In every course, pupils should have a chance to engage in activities which the teacher may know are likely to result in valuable learning products, but which the pupil pursues solely because of his intrinsic interest in the activity."

Hullfish writing in 1933 under the editorial leadership of Kilpatrick, says ". . . These emphases throw into relief the fact that education must move forward from the interests of the individual. There can be no argument about the soundness of this approach to the educative process. Interest is central"

1/Herbert S. Zim, "Student Interest in Science," School Science and Mathematics, 41:385-389, (March, 1941), p. 387.

2/0p. cit., p. 500.

5/ W. H. Kilpatrick (Editor), The Educational Frontier, D. Appleton-Century, New York, 1933, p. 185. Briggs recommends the discovery, creation, direction, and strengthening of "interests," stating that, ". . . . If the subjectmatter of the curriculum can not be revealed as interesting to a student, there is something wrong either with the time when it is presented or in the presentation. . . ."

Kilpatrick says, ". . . . because what he (the pupil) accepts, that he learns. . . It is then evident that we must stress pupil purposing because attitude more than anything else determines what

the learner will accept."

Gates says, ". . . . It is commonplace in educational circles that no factor equals interest as a means of stimulating and sustaining activity and learning."

Scope-- This study will be concerned with interests in plants and animals only.

The word urban as used in this study will apply to schools located in areas where the pupils go into the city for many of their activities and have little or no opportunities for contact with undeveloped land.

The word urban-fringe as used in this study will apply only to schools located in areas where the pupils' parents derive part of their livelihood from gardens and the pupils have the privilege of roaming in the woods.

1/Thomas H. Briggs, Secondary Education, Macmillan, New York, 1934, p. 521.

2/W. H. Kilpatrick, "The Essentials of the Activity Movement," reprint from Progressive Education, October, 1934, p. 7.

3/Arthur I. Gates, Psychology for Students of Education, (Revised Ed.), Macmillan, New York, 1933, p. 451. The word rural as used in this study will apply only to schools located in areas where the pupils' parents derive the major part of their livelihood from agriculture.

This study will be made in eleven schools, five urban, three urbanfringe, and three rural schools. 7

The first instrument will be made from the interests of not less than two hundred students in grades eight and nine.

The second instrument will be a random sample of interests suggested by the group of not less than two hundred eighth and ninth grade students.

The third or final instrument will be given to students in the ninth grade of the junior high schools and high schools surveyed.

A random sample of those taking the test will be used to establish a preference of plant and animal interests listed on the final instrument.

In this study neither the chronological age nor the I. Q. of the pupils tested will be considered.

Sex differences will be considered in this study.

The words "significant preference" as used in this study will indicate that the percentage preference is sixty per cent or above.

The words "junior high school" and "high school" as used for the titles of the tables refer to the ninth grade of the schools.

The phrase "junior high school level" as used in this study refers to grades seven, eight, and nine.

CHAPTER II

RESEARCH RELATED TO THE PROBLEM

The writer failed to uncover a similar study that was done at the ninth grade level.

More than thirty years have passed since investigations were conducted into pupils' interests in plants and animals at any junior high school grade level. The investigators used what is now elementary and junior high school grade levels. In 1921 Finley showed that interest in animal life was greater than in plant life. In one part of his study, units on a plant, a bird, and a pendulum were presented and discussed by classes aggregating 827 pupils in grades three to eight of five schools. The day after they had seen the objects, the pupils were asked to write about one of the three. The preference thus shown was interpreted to represent evidence of interest. Among the findings were these:

1. In seven classes out of nine, boys and girls in most cases wrote their themes on the same topic.

2. In twenty-two of the twenty-five classes, the greatest number of themes were written about the bird.

In 1913 Trafton administered a questionnaire about plants and

1/0p. cit., pp. 1-24.

2/Gilbert H. Trafton, "Children's Interest in Nature Materials." reprinted in <u>Nature Study Review</u>, 9:150-160, September, 1913. animals to one thousand children in grades four to seven. He found that the children had a very limited acquaintance with wild plants and animals and that interest in animals was greater than in plants. As children came to know more about animals, they showed a tendency to be impressed by habits and other activities which he points out as an opening wedge toward motivation.

In 1912 Downing published a study of children's questions and observations which had appeared in <u>St. Nicholas</u> magazine in the interval between November 1899 and April 1912. Included were materials dealing with plants, animals, and the physical sciences. They came from 441 girls (average age 12.08 years), and 301 boys (average age, 11.9 years). Among the findings which developed from this analysis were the following:

1. Sixty-one per cent of the items dealt with animals, 20.6% dealt with plants, 11.6% dealt with materials of physical science, and 1.6% were unassigned. This result might be assumed to represent a major interest in animals.

2. Nearly two-thirds of the items had to do with activities.

3. It was found that more items concerning plants were sent in by boys than were sent in by girls. More items concerning physical phenomena were sent in by girls than were sent in by boys.

1/E. R. Downing, "Children's Interest in Nature Materials." The Nature Study Review, 8:334-338, December, 1912. Other studies have been made to find out whether students at the junior high school level are more interested in physical or biological sciences. Palmer circularized a printed request, asking teachers to send in science questions that had been asked by pupils. The following general items are from a 1926 report, and represent five years' accumulation of questions sent in by 7,056 teachers.

1. The percentages of items relating to the fields of botany and zoology were as follows for the five years (1921-1925): 84.6, 88.8, 85, 79.4, and 87.9. These percentages do no include questions that dealt with agriculture or ecology. During the same period the percentages of questions that dealt with inorganic nature were as follows: 5.2, 6.2, 6.4, 7.1, and 5.8.

2. The most common type of question was that which dealt with the habits of plants and animals.

Another type of interest study in science was carried out by 2/ Pollock. A direction form was placed in the hands of eighth grade pupils in the Columbus, Ohio, schools. The form cited such items as sun, moon, stars, plants, and flowers. Each pupil was asked to

1/E. Lawrence Palmer and N. Gardiner Bump, "Leaflet Correspondence for 1925" <u>Cornell Rural School Leaflet</u>, Vol. XX, pp. 15-18, September, 1926.

2/C. A. Pollock, "Children's Interests as a Basis of What to Teach in General Science," Ohio State University Educational Research Bulletin, Vol. III, No.1, pp. 3-6, January 9, 1924. make a list of five questions in which he or she was really most interested. Examples of questions were given on the form, and included such items as automobiles, Mars, gas stoves, stars, thunder, and leaves. Samples of topics and their frequencies are: electricity, 349; stars, 253; radio, 243; heat, 181; lightning, 157; planets, 146; moon, 120; sun, 98; Mars, 97; plants, 97; animals, 37; trees, 37; food, 25; flowers, 22. The significance is that physical science items are at the head of the list and the biological topics are at the lower end.

Curtis carried out another study along these lines. He sent letters requesting questions, topics, and theories which were of interest to general science pupils in six Oregon schools, one Oklahoma school, and three New York City schools, and to the parents of these pupils. An attached sheet bore samples of questions. From the findings based upon 3,330 items from pupils and 3,232 items from adults, we may abstract the following:

1. Boys and men are more interested in technical processes than are girls and women. The range of interest of girls is greater than that of boys. The interests shown by members of

1/Francis D. Curtis, Some Values Derived from Extensive Reading Of General Science, pp. 27-40, Contributions to Education, No. 163, Bureau of Publications, Teachers College, Columbia University, New York, 1924. a sex are characteristic. Males are more interested in physical science topics; females in biological science.

2. Pupils and adults living in cities and good-sized towns are much more interested in physical science than in biological science. However, a shift of interest toward the biological sciences was manifested in both sexes between early adolescence and mature adulthood.

In constructing an instrument for testing, the writer followed $\frac{1}{2}$ the advice of various authors. Roberts states, "....aims should be constructed on the present interest, activities and capacities of the young people in our classes, and develop from them rather than from arbitrarily set standards or materials unrelated to demonstrable needs." Haig states, "The simplest and most effective way is to observe a universally accepted pedagogical law; that is, to attack a subject at the point nearest the student's interest." Coleman writes, "....it (interest) is satisfying to the learner. It is dynamic. Every unprecedented achievement in Science, Invention,

1/Holland D. Roberts, et al., English for Social Living, McGraw Hill Book Co., New York, 1943, p. 22.

2/George C. Haig, High Schools for Tomorrow, Harper Bros., New York, 1946, p. 96.

3/J. H. Coleman, "Written Composition," Interest of Junior and Senior High School Pupils, Published Ph. D. Thesis, Columbia University Teachers College, Contribution to Education, No. 494, New York, 1931, p. 96. 12

or Art bears witness to the unusual amount of effort and labor which interest engenders." The writer went directly to the students and asked for their interests in plants and animals.

The technique that the writer will use is a modified form of the survey type. It has been used only once before by Oxendine, who states, "No previous research was uncovered by the writer showing that this technique has been used by writers in the past."

Concerning making a preference between paired interests, 2/ Frutchy says, "A list of activities or topics is set up so that each activity or topic is compared with every other one. The person being sampled has the choice between every activity compared with every other activity." The study has two types of interests. Each interest of one type is compared with each interest of the other type. Interests of the same type are not compared with each other.

Concerning likes and dislikes Herring says, "It is assumed that children's choices between paired stimuli are a better criterion than the judgement of adults who observe the behavior of liking or

1/Herbert G. Oxendine, A Survey of Out-Door Science Interest At the Fifth and Sixth Grade Level, Unpublished Master's Thesis, School of Education, Boston University, Boston, Massachusetts, 1951, p. 6.

2/F. P. Frutchy, "Collecting Evidences of Children's Preferences," Educational Research Bulletin, 14: 173-178, Oct, 16, 1935.

3/John P. Herring, "Measurement of Likes and Dislikes," Journal of Educational Psychology, XXI: 169, March, 1930. disliking." With this assumption the writer used this method in his technique. The writer uses also a random sampling technique. Lindquist says, "A random sampling technique assures that every member of the population has an equal chance to be selected." This means that each member must be selected independently of all others. Oxendine says, "It is sometimes said that a random sample is one so drawn that all possible combinations of an equal number of members from the population had an equal chance to constitute the sample drawn."

Previous research determines that sex differences cannot be ignored. Thorndyke made a study of pupil reading interests. A conclusion of his survey pointed out that sex was more important than chronological age or intelligence as a determiner of patterns of interest. Nelson added proof to this fact in his study when he tested three hundred eighty-six pupils as to their preference of subject matter in the sixth grade. Of those choosing science

1/E. F. Lindquist, Statistical Analysis in Educational Research, Boston, Houghton Mifflin Company, 1940, pp. 3-4.

2/Op. cit., p. 7.

3 Robert Thorndyke, Children's Reading Interest, Bureau of Publications, Teachers College, Columbia University, New York, 1941, p. 53.

4/M. H. Nelson, Pupils Preferences of Courses in the Sixth Grade, Unpublished Thesis, Boston University, 1948, p. 25, Table 13. eighty-four were boys. Oxendine thought it was necessary to make a study of sex differences. The writer feels that with the evidence of this previous research it is necessary to include a study of sex differences in this study.

As for the phase "significant preference," Oxendine used sixty per cent as a significant preference in his study.

1/0p. cit. pp. 12-73.

2/Ibid., P. 3.

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CHAPTER III

PLAN OF INVESTIGATION

This study is divided into two phases. (1) A survey of interest in plants and animals. (2) A survey of preference in plants and animals established by a sample of the pupils tested selected at random. These two phases will be discussed under method of administration.

Construction of the Testing instrument - To make a testing instrument, the writer began directly with the students. A group of two hundred and two students in grades eight and nine were asked by their teachers to list on separate sheets of paper their interests in plants and animals. The students were allowed to write freely and consequently some wrote many interests and others wrote few interests. In examining the papers for the first time. the writer found out that many interests could be combined or converged into categories. For example, the human blood, the human brain, and the human nervous system could be combined into a category called the human body. In examining the papers for the second time, the writer recorded the different categories and the number of interests under each category. (See Appendix, Forms la, 1b, 1c, and 1d). The writer established nine categories under the area of animals and nine categories under the area of plants. This comprised instrument one. Because the four highest ranking categories under the area of plants and the four highest ranking categories

under the area of animals comprised more than eighty per cent of the total number of interests, these categories were considered in preparing instrument two. The writer referred back to the original papers and by a random selection obtained two interests under each of the four highest ranking categories in the area of plants and in the area of animals. The writer then made each interest more vivid and balanced the interests in each area as to probable pupil interest. These interests or items formed instrument two. (See Appendix. Form 2). The eight interests under animals were matched against the eight interests under plants. This comprised the final instrument. They were matched in this manner: each of the eight animal interests was matched with each of the eight plant interests in pairs. This made sixty-four pairs of interests. They were mimeographed on two pages with instructions on the first page. The pairs of interests were arranged in a definite manner. The first interest of the first pair was an animal interest followed by a plant interest. The second pair had a plant interest first followed by an animal interest. All of the odd numbered pairs were like the first pair and all of the even numbered pairs were like the second pair. On the form there were spaces provided for the pupil's name, age, school, grade, sex, town, and teacher. (see Appendix, Form 3a, 3b).

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<u>Method of administration</u>-- Phase I. The writer visited three of the schools and administered the test himself. The teachers of the schools which he did not visit were given instructions as to administering the test. Only ninth grade pupils were given the test. The pupils were told to place their name, age, school, and grade in the spaces provided. They were then told to check the space appropriate their sex, to write their town, and to write the name of their teacher in the proper spaces. They were now ready to read the interests. They placed a check mark in the parenthesis next to the animal or plant interest that they would like to know more about or which they were more interested in. Each pupil was given ten minutes to take the two-page test.

Phase II. By a random selection, the writer chose the tests of three boys and three girls from each school. The preference of the interests of the six pupils from each school was recorded. The interests were arranged in the order of rank established by these pupils. 18

CHAPTER IV

STATISTICAL DATA

SCHOOL SYSTEMS THAT WERE SAMPLED IN THIS STUDY:

I. Urban Schools

Brockline High School, Brockline, Massachusetts Carter Junior High School, Chelsea, Massachusetts Sayles Junior High School, Pawtucket, Rhode Island Watertown East Junior High School, Watertown, Massachusetts Morton Junior High School, Fall River, Massachusetts

II. Urban-Fringe Schools

Sharon High School, Sharon, Massachusetts Mission High School, Roxbury, Massachusetts East Providence Central Junior High School, East Providence, Rhode Island

III. Rural Schools

Plymouth Junior High School, Plymouth, Massachusetts Ipswich High School, Ipswich, Massachusetts Wareham High School, Wareham, Massachusetts

I. Urban Schools That Were Sampled In This Study:

Brookline High School Carter Junior High School Sayles Junior High School Watertown East Junior High School Morton Junior High School

Explanation of Phase I.

Tables (1,2,3,4,5,7,8,9,11,12,13) indicate the number of interests in plants and animals that each pupil checked on his or her testing instrument. Since there were sixty-four pairs of interests on each testing instrument, the total for each boy and each girl will be sixty-four interests. The major column at the left lists the interests in plants and animals by the boys. The middle column lists the interests in plants and animals by the girls. The major column at right indicates the results of the boys and girls combined. For example, in table 1, ten boys and seven girls were used. The first boy checked fourty-two animal interests and twenty-two plant interests. The first girl checked fifty-four animal interests and ten plant interests. In the third column, the interests of the first boy and first girl are combined. Fourty-two animal interests by the first boy and fiftyfour animal interests by the first girl give ninety-six animal interests. Twenty-two plant interests by the first boy and ten plant interests by the first girl give thirty-two plant interests. The other figures in the three columns are to be interpreted in the same way. At the bottom of each table, the total number of interests by the boys in plants and animals are listed in the first major column; at the bottom of each table, the total number of interests by the girls in plants and animals are listed in the second major column; and at the bottom of each table, the total number of interests in plants and animals by the boys and girls combined are listed.

At the bottom of each table, the percentage figures are the percentage of interests in plants and animals by the boys, girls and both combined.

Table 6 gives the number and percentage of the interests chosen by the pupils of the urban schools. The first major column lists the number of boys and girls that were used. The second major column gives the total number of interests in plants and animals by the boys of each urban school. The third major column gives the total number of interests in plants and animals by the girls of each urban school. The fourth major column lists the combined total of the interests of the boys and girls of each school in plants and animals. At the bottom of the table, the total number of pupils of the urban schools are listed and the percentage of boys and girls are listed. In the next three columns at the bottom, the number of interests in plants and animals by the boys, girls, and pupils combined are listed. The percentage of these interests are also listed.

Table 10 is like table 6, except that table 10 gives the results of the urban-fringe schools.

Table 14 is like table 6, except that table 14 gives the results of the rural schools.

Table 15 is like table 6, except that table 15 gives the results of the total number of pupils of the urban schools, urban-fringe school, and rural schools.

An analysis of the results of each table is given.

20Ъ

	I Numbe Inter	BOYS er of cests	in	GI Numbe Inter	RLS r of ests	iri '	TOTAL Number of Interests in			
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total	
	42 32 48 41 42 62 2 36 47 30	22 32 16 23 22 62 28 17 34	64 64 64 64 64 64 64 64	54 14 56 55 56 55 45	10 50 8 9 8 9 19	64 64 64 64 64 64	96 46 104 96 98 117 47 36 47 30	32 82 24 30 11 81 28 17 34	128 128 128 128 128 128 128 64 64 64	
Total of Interests	382	258	640	335	113	448	717	371	1088	
Percentage Total of Interests	59.6	40.4	100	74	26	100	66	34	100	

Table 1. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils at Brockline High School. 10 Boys and 7 Girls.

Analysis: The pupils at Brookline High School show a significant preference for animals. The girls show a very definite interest in animals and the boys show a preference for animals. The interests of the girls in animals is 14.4% higher than the interests in animals by the boys.

	F	BOYS		GT	DTQ		-	OT AT	
	Numbe	er of		Numbe	The of		T	JTAL	
-	Inter	resta	in	Trtor		f	aumbe:	r oi	3 I
	Ani-			Ani	Caus		unter	ests 1	<u>n</u>
	mal	Plant	Total	mal	Plant	Total	mal mal	Plant	Totol
						20000	most		TOCAT
	41	23	64	37	27	64	78	50	128
2C	64	0	64	32	32	64	96	32	128
	28	36	64	29	35	64	57	71	128
	44	20	64	0	64	64	44	84	120
	29	35	64	53	11	64	82	46	128
	56	8	64	40	24	64	96	32	120
	43	21	64	14	50	64	57	71	128
	49	15	64	42	22	64	91	37	120
	55	9	64	47	17	64	102	26	100
	38	26	64	18	46	64	56	79	100
	29	35	64	29	35	64	58	70	100
	59	5	64	50	14	64	100	10	140
	56	8	64	39	25	64	95	22	140
	32	32	64	26	38	64	58	70	120
1	41	23	64	7	57	64	18	20	128
	50	14	64	7	57	64	57	71	128
	61	3	64	2	62	64	67	65	128
	43	21	64	20	44	64	67	00	128
	31	33	64	28	36	64	50	60	128
	47	17	64	27	37	64	59	09	128
	62	2	64	36	28	64	14	54	128
	43	21	64	8	56	64	90	30	128
	2	62	64	51	13	64	57	77	128
	47	17	64	25	30	64	00	75	128
		-	°.	20	00	04	14	56	128
Preference									
Total of									
Intereste									
Percentage			1						
Total of		1 1							
Interests									

Table 2. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils at Carter Junior High School in Chelsea, Mass. 48 Boys and 29 Girls.

(concluded on next page)

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Table 2. (concluded)

	I Numbe Inter	BOYS er of cests	in	GI Numbe Inter	RLS r of rests	in '	TOTAL Number of Interests in			
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total	
	64 55 52 45 61 29 45 64 29 45 64 50 49 61 12 63 22 63 26 58 58	0 9 12 19 1 3 6 3 5 0 15 0 9 6 4 15 3 5 2 1 32 2 8 6	64 64 64 64 64 64 64 64 64 64 64 64 64 6	30 7 29 9 38	34 57 35 26	64 64 64 64	94 62 81 101 61 29 45 94 49 61 12 63 22 64 9 61 162 63 22 64 58	34 66 47 74 27 36 35 19 5 0 15 0 29 45 35 2 1 32 2 18 6	128 128 128 128 128 64 64 64 64 64 64 64 64 64 64 64 64 64	
Preference Total of Interests	2207	865	3072	780	1076	1856	2987	1941	4928	
Percentage Total of Interests	72	28	100	42	58	100	60	40	100	

Analysis: The pupils at the Carter Junior High School in Cheslea show a significant preference for animals. The boys show a very definite preference for animals. The girls show a preference for plants which is not significant. The interests in animals by the boys are 30% higher than the interests in animals by the girls.

	I Numbe Inter	B OYS er of cests	in	GI Numbe Inter	RLS er of cests	in''	TOTAL Number of Interests in			
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total	
	45 41 50 60 52 64 61 64 55 63 64	19 23 14 4 12 0 3 0 9 1 0	64 64 64 64 64 64 64 64 64	60 21 15 23 55 61 21 37 19 26 5 64 62	4 43 49 63 49 41 9 3 42 7 43 89 0 2	64 64 64 64 64 64 64 64 64 64 64 64 64	105 62 65 61 67 87 116 125 76 100 83 26 5 64 62	23 66 63 67 61 41 12 3 52 28 45 38 59 0 2	128 128 128 128 128 128 128 128 128 128	
Freference Total of Interests	619	85	704	485	475	960	1104	560	1664	
Percentage Total of Interests	88	12	100	51	49	100	66	34	100	

Table 3. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils at Sayles Junior High School in Pawtucket. 11 Boys and 15 Girls.

Analysis: The pupils at Sayles Junior High School show a significant preference for animals. The boys' percentage is 37% higher than the girls' percentage for animals interests. The boys show a very definite preference for animals, while the girls show a preference for animals.

Table 4. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils at Watertown East Junior High School. 51 Boys and 44 Girls.

	T	NVO		1 07	DTO				
	Numb			W. D	RLS	й с.,	L T	DTAL	
	Tatos		-	Numbe	r oi		Numbe:	r of	2
	And	ears	rn i	Inter	ests	m	Inter	ests i	n
	A11-	-		Ani-			Ani-	î	R.
	mai	Plant	Total	mal	Plant	Total	mal	Plant	Total
	58	6	64	19	45	64	77	51	200
	39	25	64	23	41	64	62	01	128
	63	1	64	44	20	64	107	00	128
	54	10	64	52	12	64	107	41	128
	35	29	64	52	12	64	100	22	128
	31	33	64	58	6	64	07	41	128
	41	23	64	15	40	64	69	39	128
	52	12	64	25	30	64	50	72	128
	28	36	64	30	34	64	77	51	128
	27	37	64	48	16	64	58	70	128
	44	20	64	41	22	04	75	53	128
	59	5	64	38	20	04	85	43	128
	56	8	64	4.8	16	04	97	31	128
	48	16	64	20	10	64	104	24	128
	0	64	64	51	30	64	77	51	128
	58	ŝ	64	101	10	64	51	77	128
	44	20	64	40	18	64	104	24	128
	41	23	64	10	12	64	96	32	128
	49	15	64	40	18	64	87	41	128
	47	17	64	20	44	64	69	59	128
	60		64	50	8	64	103	25	128
	36	20	64	64	0	64	124	4	128
	42	20	64	5	59	64	41	87	128
	40	24	04	62	2	64	104	24	128
	57	64	04	23	41	64	63	65	128
Durch	00	1	64	49	15	64	112	16	128
Freierence									
Total of				51					
interests									
Damas									
rercentage									
TOTAL OF									
interests									

(concluded on next page)

Table 4. (concluded)

	I Numbe Inter	BOYS er of	in	GI Numbe	RLS r of	÷	TOTAL Number of		
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	61 63 49 46 47 55 64 9 46 29 46 29 46 39 27 52 44 45 31 28 64 50 4 50 4	$\begin{array}{c}3\\1\\21\\15\\18\\17\\9\\14\\0\\5\\0\\8\\25\\12\\0\\0\\29\\33\\16\\14\\0\\0\\29\\33\\16\\14\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\0\\$	64 64 64 64 64 64 64 64 64 64 64 64 64 6	13 36 48 54 0 55 20 41 46 23 44 9 61 39 53 49 53	51 28 16 10 64 9 44 23 8 42 51 25 0 3 5 29 15 11	64 64 64 64 64 64 64 64 64 64 64 64 64 6	74 99 91 103 46 102 75 91 110 51 77 100 78 91 113 91 99 113 117 35 31 52 48 50 64	54 29 37 25 82 6 53 7 18 77 18 50 37 15 37 15 37 15 37 15 37 15 37 15 37 16 4 12 9 312 16 14 0	128 128 128 128 128 128 128 128 128 128
Preference Total of Interests	23 88	8 7 6	54 3264	1728	1088	2816	4 4116	_60 1964	6080
Percentage Total of Interests	73	27	100	61	39	100	68	32	100

Analysis: The pupils at the Watertown East Junior High School show a significant preference for animals. The interest in animals for both boys and girls is above 60%. The interest in animals for the boys is twelve per cent higher than for the girls.

Table 5. Number and Percentage of the Interests in Plants and Animals Shosen by the Pupils of the Morton Junior High School in Fall River, Mass. 24 Boys and 22 Girls.

	I Numbe	BOYS er of	in	GI Numbe	RLS r of		T(Numbe:	TAL r of	
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	<u>Plant</u>	Total
	$\begin{array}{c} 61\\ 62\\ 32\\ 53\\ 7\\ 9\\ 56\\ 4\\ 35\\ 61\\ 25\\ 39\\ 56\\ 64\\ 35\\ 53\\ 9\\ 56\\ 16\\ 29\\ 64\\ 29\\ 64\end{array}$	3 2 32 11 27 25 8 0 9 11 39 25 9 28 61 15 8 8 48 21 35 0	64 64 64 64 64 64 64 64 64 64 64 64 64 6	64 43 7 42 34 62 26 45 29 18 51 45 58 61 23 25 42 11 31	0 21 57 22 30 2 38 9 25 40 31 29 41 29 25 33	64 64 64 64 64 64 64 64 64 64 64 64 64 6	125 105 39 95 71 101 82 79 76 82 94 61 76 81 71 68 27 74 29 64	$\begin{array}{c} 3\\23\\89\\33\\57\\26\\19\\616\\49\\52\\43\\834\\67\\52\\47\\57\\60\\101\\545\\0\end{array}$	128 128 128 128 128 128 128 128 128 128
Total of Interests	1024	542	1566	807	601	1408	1831	1143	2974
Percentage Total of Interests	67	33	100	57	43	100	61	39	100

Analysis: The pupils at the Morton Junior High School in Fall River show a significant preference for animals. The interests by the boys are very definite animal interests. The girls show a preference for animals. The boys' percentage for animals is ten per cent higher than the girls percentage for animals.

Table 6. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils of the Urban Junior High Schools and High Schools

SCH	logLs			81		PLANT	AND AN	IIMAL I	NTERES	TS			
	No.	No. of Pupils			Boys No. of Interests			Girls No. of Interests			Total No. of Interests		
School	Boys	Girls	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	
Brookline Carter Sayles Watertown Morton	10 48 11 51 24	7 29 15 44 22	17 77 26 95 46	382 2207 619 2388 1024	258 865 85 876 542	640 3072 704 3264 1566	335 780 485 1728 807	113 1076 475 1088 601	448 1856 960 2816 1408	717 2987 1104 4116 1831	371 1941 560 1964 1143	1088 4928 1664 6080 2974	
Preferense Total of Interests	144	117	261	6620	2626	9246	4135	3353	7488	10755	5979	16734	
Percentage Total of Interests	55	45	100	71	29	100	55	45	100	64	36	100	

Analysis: The pupils of the urban schools show a significant preference for animals. Seventy-one per cent of the interests by the boys are animal interests. This constitutes a significant preference. Fifty-five percent of the interests by the girls are animal interests. This constitutes a definite preference.
II. Urban-Fringe Schools That Were Sampled In This Study:

Sharon High School Mission High School East Providence Central Junior High School

	H Numbe Inter	B OYS er of rests	in	GI Numbe Inter	RLS r of ests	íri '	Tumbe: Inter	oTAL r of ests i	n ¹
-	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	61 38 30 48 54 40 53 61 43 62 56 22 64	3 26 34 16 10 16 10 24 1 3 20 33 2 8 2 8 2 0	64 64 64 64 64 64 64 64 64 64 64 64 64 6	12 \$0 30 18 9 42 12 50 8 6 36 46	52 24 346 55 22 52 14 58 28 18	64 64 64 64 64 64 64 64 64 64 64	73 78 60 66 2 96 60 104 48 59 90 31 62 56 22 64	55 50 68 62 68 24 80 9 31 38 32 8 42 0	128 128 128 128 128 128 128 128 128 128
Preference Total of Interests	819	269	1088	309	459	768	1128	728	1856
Percentage Total of Interests	75	2 5	100	40	60	100	60	40	100

Table 7. Percentage and Number of the Interests in Plants and Animals Shosen by the Pupils at the Sharon High School. 17 Boys and 12 Girls.

Analysis: The pupils at the Sharon High School show a significant preference for animals, Seveny-five per cent of the boys' interests favor animals. This indicates a very definite preference for animals. Sixty per cent of the interests by the girls are in favor of plants and this constitutes a significant preference for plants.

	I Numbe Inter	B OYS er of cests	in	GI Numbe Inter	RLS r of rests	in '	T Numbe: Inter	o TAL r of ests i	n '
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
Drug	37 64 22 37 22 49 60 62 0 48 55 61 38 41 64 62 43 55 64	27 42 38 27 42 38 27 42 5 3 4 2 4 2 5 3 4 2 4 2 5 3 4 2 6 4 6 9 3 6 6 2 3 0 8 2 7 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 4 2 5 3 6 16 9 3 6 2 5 2 0 8 2 19 3 0 18 2 2 9 0 0 18 2 2 9 0 0 18 2 2 9 0 0 18 2 2 9 0 0 18 2 2 9 0 0 18 2 2 1 9 0 0	$\begin{array}{c} 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\$	24 35 33 48 44 47 42 57 40 38 31 42 57 40 38 31 44 62 64 0 27 53 52 38	40 29 31 20 17 22 7 24 26 28 30 24 20 34 37 11 29 26	64 64 64 64 64 64 64 64 64 64 64 64 64 6	61 99 55 74 81 69 91 118 100 100 36 79 99 101 100 105 94 73 95 78 107 102	67 29 73 54 47 59 37 10 28 29 29 29 27 28 34 55 33 50 21 26	128 128 128 128 128 128 128 128 128 128
Total of Interests	1138	462	1600	1058	542	1600	2196	1004	3200
Percentage Total of Interests	71	29	100	66	34	100	69	31	100

Table 8. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils of East Providence Central Junior High School. 22 Boys and 22 Gitts.

Analysis: The pupils at East Providence Central Junior High School show a significant preference for animals. The percentage for the boys is 71%, while the percentage of interests in animals for the girls is 66%. There is no question that their interests are in animals rather than in plants.

] Numbe Inter	BOYS er of	in	GI Numbe	RLS r of	f	T Numbe:	TAL r of	······
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	47 61 27 63 43 63 52 60 9 56 43 52 9 56 43 52 9 56 43 51 54	17 3 18 37 35 1 23 21 12 4 5 8 10 35 21 30 9 63 10	64 64 64 64 64 64 64 64 64 64 64 64 64 6	$\begin{array}{c} 30\\ 23\\ 35\\ 33\\ 29\\ 31\\ 26\\ 41\\ 40\\ 57\\ 36\\ 35\\ 29\\ 31\\ 32\\ 28\\ 23\\ 34\\ 44\\ 42\\ 52\\ 52\\ \end{array}$	34 41 29 35 33 23 24 7 28 29 53 26 40 20 24 2 20 24 22 20 22 22 22 22 22 22 22 22 22 22 22	64 64 64 64 64 64 64 64 64 64 64 64 64 6	77 84 81 60 58 94 67 84 104 92 117 55 92 89 58 74 66 63 24 88 44 42 252	$51 \\ 44 \\ 47 \\ 68 \\ 70 \\ 34 \\ 51 \\ 44 \\ 24 \\ 36 \\ 11 \\ 73 \\ 36 \\ 39 \\ 70 \\ 54 \\ 65 \\ 104 \\ 40 \\ 20 \\ 42 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12 \\ 12$	128 128 128 128 128 128 128 128 128 128
Preference Total of Interests									
Percentage Total of Interests									<u>_</u>

Table 9. Number and Percentage of the Interests in Plants and Animals Schosen by the Pupils at Mission High School in Roxbury, Mass. 20 Boys and 30 Girls.

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(concluded)

	I Numbe Inter	BOYS er of cests	in	GI Numbe Inter	RLS r of cests	in	T Numbe: Intere	DTAL r of ests i	n '
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
				26 15 49 46 7 64	38 49 15 18 57 0	64 64 64 64 64	26 15 49 46 7 64	38 49 15 18 57 0	64 64 64 64 64
Preference Total of Interests	857	423	1280	1039	881	1920	1896	1304	3200
Percentage Total of Interests	67	33	100	54	46	100	59	41	100

The pupils at the Mission High School in Roxbury show a preference Analysis: for animals, but the preference is not significant for this study. The boys show a very definite preference for animals, but the girls show only a slight preference for animals.

Table 9.

SCHO	QLS			PLANT AND ANIMAL INTERESTS										
	No.	of Pu	pils	Boys No. of Interests			G No. of	irls Inter	Asts	Total No. of Interests				
School	Boys	Girls	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total		
Sharon East Providence Roxbury	17 22 20	12 22 30	29 44 50	819 1138 857	269 462 423	1088 1600 1280	309 1058 1039	459 542 881	768 1600 1920	1128 2196 1896	728 1004 1304	1856 3200 3200		
Preference Total of Interests	59	64	123	2814	1154	3968	2406	1882	4288	5220	3036	8256		
Percentage Total of Interests	48	52	100	71	29	100	56	44	100	67	33	100		

Table 10. Number and Percentage of the Interests in Plants and Animals Chosen by the pupils of the Urban-Fringe Schools

Analysis: Sixty-seven per cent of the interests chosen by the pupils at the urban-fringe schools are animal interests. This constitutes a significant preference. The boys show a marked preference for animals, while the girls show a preference for animals.

III. Rural Schools That Were Sampled In This Study:

Plymouth Junior High School Ipswich High School Wareham High School

	Numbe	BOYS er of		GI Numbe	RLS r of		T Numbe:	DTAL r of	
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	<u>ests i</u> Plant	n Total
	60 62 34 62 42 48 35 37 42 53 45 45 45 45 45 45 45 59	4 2 30 22 16 29 27 22 11 22 28 24 17 5	64 64 64 64 64 64 64 64 64 64 64 64 64 6	61 36 46 53 22 8 26 41 32 17 36 6 29 38	3 28 18 11 42 56 38 23 24 7 28 55 26	64 64 64 64 64 64 64 64 64 64 64 64	121 98 80 115 64 56 61 78 70 81 48 65 78 47 24 59	7 30 48 13 64 72 67 50 5 4 57 47 80 63 50 17 40 5	128 128 128 128 128 128 128 128 128 128
Total of Interests	768	320	1088	451	445	896	1219	765	1984
Percentage Total of Interests	70	30	100	50	50	100	61	39	100

Table 11. Number and Percentage of the Interests in Plants and Animals Chosen by the Pupils at the Wareham High School. 17 Boys and 14 Girls.

Analysis: The pupils at the Wareham High School show a significant preference for animals. Seventy per cent of the interests chosen by the boys are animal interests. The interests by the girls are evenly divided.

Table 12. Number and Percentage of the Interests in Plants and Animals chosen by the Pupils at Ipswich High School. 36 Boys and 15 Girls.

	l Numbe	BOYS er of		GI Numbe	RLS r of	1 v.	Tumbe	OTAL r of	
	Inter	rests	in	Inter	ests	in''	Inter	esta i	n'
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	54 30 51 35 52 37 50 40 32 54 48 45 37 42 48 57 42 59 64	10 34 13 29 12 1 27 14 24 21 0 8 20 16 19 27 22 16 11 5 0	$\begin{array}{c} 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\ 64\\$	58 43 28 45 39 26 19 31 10 36 61 47 42 46	6 21 35 19 32 25 38 45 33 45 35 45 37 22 18	64 64 64 64 64 64 64 64 64 64 64 64	$112 \\ 73 \\ 79 \\ 80 \\ 84 \\ 102 \\ 63 \\ 69 \\ 71 \\ 42 \\ 89 \\ 125 \\ 103 \\ 86 \\ 94 \\ 45 \\ 55 \\ 37 \\ 42 \\ 48 \\ 53 \\ 59 \\ 64 \\ 53 \\ 50 \\ 50 \\ 50 \\ 50 \\ 50 \\ 50 \\ 50$	$ \begin{array}{r} 16 \\ 55 \\ 49 \\ 48 \\ 44 \\ 26 \\ 65 \\ 59 \\ 57 \\ 86 \\ 39 \\ 35 \\ 42 \\ 19 \\ 21 \\ 97 \\ 22 \\ 16 \\ 11 \\ 5 \\ 0 \end{array} $	128 128 128 128 128 128 128 128 128 128
Preference Total of Interests			242						
Percentage Total of Interests				,		8			j

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Table 12. (concluded)

	I Numbe Inter	BOYS er of cests	in	GI Numbe Inter	RLS r of cests	in '	T Numbe: Inter	oTAL r of ests i	<u>.</u>
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	47 50 47 56 15 54 50 57 63 63 42 59	17 14 17 8 49 10 14 7 1 22 5	64 64 64 64 64 64 64 64 64 64				47 50 47 56 15 54 50 57 63 63 42 59	17 14 17 8 49 10 14 7 1 1 22 5	64 64 64 64 64 64 64 64 64 64
Preference Total of Interesta	1758	546	2304	563	397	960	2321	943	3264
Percentage Total of Interests	76	24	100	59	41	100	71	29	100

Analysis: The pupils at Ipswich High School show a significant preference for animals. The boys show a marked preference for animals, while the girls show a preference for animals. The interests by the boys for animals are 76%, while the interests by the girls are 59%.

Lapte.	13.	Number and Percentage of the Interests in Plants and Animale
		Chosen by the Pupils at Plymouth Junior High School.
		23 Boys and 26 Girls.

	I Numbe Inter	BOYS er of	in	GI Numbe	RLS r of	1	Tumber	TAL r of	
	Ani- mal	Plant	Tota	Ani- mal	Plant	Total	Ani- mal	Plant	Total
	51 45 63 63 64 64 63 63 63 63 63 63 63 63 63 63 63 63 63	13 19 1 8 6 0 26 4 1 0 14 11 17 3 1 5 37	64 64 64 64 64 64 64 64 64 64 64 64 64 6	$\begin{array}{c} 31 \\ 49 \\ 39 \\ 57 \\ 60 \\ 41 \\ 25 \\ 49 \\ 52 \\ 34 \\ 36 \\ 11 \\ 43 \\ 57 \\ 62 \\ 26 \\ 54 \\ 42 \\ 63 \\ 53 \\ 9 \\ 44 \\ 54 \\ 39 \\ 30 \end{array}$	33 15 25 7 4 23 39 15 12 30 28 53 21 7 2 38 10 22 11 25 20 10 25 34	64 64 64 64 64 64 64 64 64 64 64 64 64 6	82 94 102 120 116 89 89 112 116 72 59 73 97 121 112 76 107 89 124 86 102 103 81 39 70	46 34 26 8 12 39 39 16 12 56 69 55 1 7 16 52 1 39 4 26 55 1 7 16 52 1 39 4 26 55 1 7 16 52 1 39 4 26 55 1 7 16 55 17 55 55 17 55 55 17 55 55 17 55 55 17 55 55 17 55 55 17 55 55 55 55 55 55 55 55 55 55 55 55 55	128 128 128 128 128 128 128 128 128 128
Preference Total of Interests	1201	271	1472	37 1127	27 537	. <u>64</u> 1664	37 2328	27 808	64 3136
Percentage Total of Interests	81	19	100	68	32	100	74	26	100

Analysis: The pupils at the Plymouth Junior High School show a very significant preference for animals. Both the boys and the girls have a percentage that is greater than 60%. Eighty-one per cent of the interests by boys are for animals, while sixty-eight per cent of the interests by the girls are for animals.

Tab.

SCI	HOOLS			·		PLANT	AND AN	IMAL I	NTERES	TS		
	No.	of Pu	pils	No. of	Boys Inter	ests	No. of	irls Inter	ests_	T No.o	otal <u>f Inte</u>	ŕests
School	Boys	Girls	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Tote
Ipswich Wareham Plymouth	36 17 23	15 14 26	51 31 49	1758 768 1201	546 320 271	2304 1088 1472	563 451 1127	397 445 537	960 896 1664	2321 1219 2328	943 765 808	3264 1984 3136
Preference Total of Interests	76	55	131	3727	1137	4864	2141	1379	3520	5868	2516	8384
Percentage Potal of Interests	58	42	100	77	23	100	60	40	100	70	- 3 0	100

Table 14. Number and Percentage of the Interests in Plants and Animals chosen by the Pupils of the Rural Schools

Analysis: The pupils of the rural schools show a significant preference for animals. The interests in animals by the boys are ten per cent higher than the interests by girls.

•••

SCH	IOQLS					PLANT	AND AN	IMAL I	NTERES	TS			
	No.	of Pu	pils	Boys No. of Interests			G No. of	irls Inter	asts	Total No. of Interests			
School	Boys	Girls	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	Ani- mal	Plant	Total	
Urban Urban-fringe Rural	144 59 76	117 64 55	261 123 131	6620 2814 3727	2626 1154 1137	9246 3968 4864	4135 2406 2141	3353 1882 1379	7488 4288 3520	10755 5220 5868	5979 3036 2516	16734 8256 8384	
Preference Total of Interests	279	236	515	13161	4917	18078	8682	6614	15296	21843	11531	33374	
Percentage Potal of Interests	54	46	100	73	27	100	57	43	100	65	35	100	

Table 15. Number and Percentage of the Plant and Animal Interests Chosen by the Total Number of Pupils Surveyed in This Study

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Analysis: The pupils of the junior high schools and high schools surveyed show a significant preference for animals. The preference of boys for animals is sixteen per cent higher than for the girls. PHASE II

Explanation of Phase II

Tables (16,17,18,19,20,24,25,26,30,31,32) are a random sample of the interests of three boys and three girls selected from each school. Since each pupil made sixty-four responses, the responses by the six pupils will total 384 or sixty-four times six pupils.

Table 21 is a summation of the interests by the boys of the urban schools surveyed. Since there were five urban schools and the interests of three boys from each school were used, the responses will total 960 or sixty-four responses times fifteen pupils.

Table 22 is like table 21, except that it is a summation of the responses by the girls of the urban schools.

Table 23 is a complete total of the interests of both the boys and the girls of the urban schools surveyed. Since the interests of six pupils were used from each of five schools, the interests will total 1920 or sixty-four responses times thirty pupils.

Table 27 is a summation of the interests by the boys of the urban-fringe schools. Since there were three urban-fringe schools sampled and the results of three boys from each school were used, the responses will total 576 or sixty-four responses times nine pupils.

Table 28 is like table 27, except that the responses of nine girls of the urban-fringe schools were recorded.

Table 33 is like table 27, except that the responses of the boys of the rural schools were recorded. Three rural schools were sampled.

Table 34 is like table 28, except that the responses of the girls of the rural schools were recorded.

Table 29 is a complete total of the interests of both boys and girls of the urban-fringe schools. Since there were three urbanfringe schools and six pupils from each school, the results will total 1152 or sixty-four responses times eighteen pupils.

Table 35 is like table 29, except that it is the result of three rural schools.

Table 36 is a complete total of the interests of the boys of all eleven schools surveyed. The results of thirty-three boys were used. The total will be 2112 or sixty-four responses times thirtythree pupils.

Table 37 is like table 36, except that the responses of all of the girls were recorded.

Table 38 is a complete total of the responses of three boys and three girls from all of the eleven schools. The results of thirtythree boys and thirty-three girls were used. The total will be 4224 or sixty-four responses times sixty-six pupils.

All of the interests are listed in the order of rank established by the pupils selected at random.

An analysis of the results of each table is given.

42b

Table	16.	Plant and Animal	Interes	ts Listed	in the Order	of
		Rank Established	by the	Pupils at	the Brookline	High
		School. (Thr	ee Boys	and Three	Girls.	0

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How some animals live during the winter	22	24	46
Why dogs make good pets	19	23	42
How some animals see in dim light	18	20	38
How farm animals are useful	14	24	38
How birds fly	17	19	36
How fish breathe underwater	19	16	35
How your brain works	16	16	32
How you digest food	. 19	13	32
Sup-Total	144	155	299
PLANT INTERESTS			
Why leaves change color in the fall	10	7	17
How to tell one tree from another	8	6	14
How to tell one flower from another	6	7	13
How to take care of flowers	6	5	11
How plants obtain food	7	3	10
How stems, roots, and leaves do their work	6	3	9
How to raise plants at home	3	4	7
How to grow your own vegetables	2	2	4
Sub-Total	48	37	85
Grand-Total	192	192	384

Analysis: Seventy-seven per cent of the interests that were chosen by the pupils at the Brookline High School are animal interests. This constitutes a significant preference for animals. The lowest ranking animal interest is fifteen higher than the highest ranking plant interest. The first two highest ranking animal interests rank extremely high.

Table 17. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils at the Carter Junior High School in Chelsea, Mass. Three Boys and Three Girls.

9			
ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How birds fly	22	10	32
How your brain works	17	12	29
How you digest food	15	14	29
How some animals live during the winter	19	7	26
How fish breathe underwater	16	10	26
How some animals see in dim light	17	9	26
Why dogs make good pets	22	2	24
How farm animals are useful	16	1	17
Sub-Total	144	65	209
PLANT INTERESTS			
How stems, roots, and leaves do their work	8	18	26
Why leaves change color in the fall	6	19	25
How to tell one tree from another	7	18	25
How to grow your own vegetables	6	15	21
How plants obtain food	8	13	21
How to take care of flowers	- 6	15	21
How to raise plants at home	3	15	18
How to tell one flower from another	4	14	18
Sub-Total	48	127	175
Grand-Total	192	192	384

Analysis: The pupils at the Carter Junior High School show a slight preference for animals, but it is not significant for this study.

	1	1	1
ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How aminals live during the winter	25	16	41
How fish breathe underwater	23	16	39
How your brain works	21	14	35
How some animals see in dim light	24	9	33
How birds fly	21	11	32
How farm animals are useful	23	7	30
How you digest food	19	10	29
Why dogs make good pets	19	9	28
Sup-Total	175	92	267
PLANT INTERESTS			
How plants obtain food	3	15	18
How to tall one tree from another	3	14	17
How leaves change color in the fall	3	12	15
How to take care of flowers	3	12	15
How to raise plants at home	1	13	14
How to tell one flower from another	2	12	14
How to grow your own vegetables	1	12	13
How stem, roots, and leaves do their work	1	10	11
Sub-Total	17	100	117
Grand-Total	192	192	384

Table 18. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils of Sayles Junior High School in Pawtucket. Three Boys and Three Girls.

Analysis: The pupils at Sayles Junior High School show a significant preference for animals. Sixty-nine per cent of the interests are animal interests. The lowest ranking animal interest exceeds the highest ranking plant interest by ten. Some of the animal interests rank very high.

Table	19.	Plant and Animal Interests Listed in the Order of Rank
		Established by the Pupils at Watertown East Junior
		High School. Three Boys and Three Girls.

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How birds fly	20	25	45
How some animals live during the winter	20	23	43
How fish breathe underwater	22	21	43
Why dogs make good pets	17	24	41
How some animals see in dim light	16	23	39
How farm animals are useful	15	23	38
How you digest food	17	10	27
How your brain works	13	13	26
Sup-Total	140	162	302
PLANT INTERESTS			
Iow plants obtain food	11	5	16
low to grow your own vegetables	9	3	12
low to raise plants at home	9	3	12
low stems, roots, and leaves do their work	8	4	12
Thy leaves change color in the fall	6	4	10
low to take care of flowers	3	4	7
How to tell one flower from another	4	3	7
low to tell one tree from another	2	4	6
Sub-Total	52	30	82
Grand-Total	192	192	384

Anadsis: The interest in animals by the pupils at the Watertown East Junior High School is seventy-eight per cent. This is a significant preference for animals. The lowest ranking animal interest exceeds the highest ranking plant interest by ten.

Table 20.	Plant and Animal Interests Listed in the Order of
	Rank Established by the Pupils at the Morton Junior
	High School in Fall River, Mass.
	Three Boys and Three Girls .

ANTMAL INTERESTS	BOVS	CIDIC	TOTAT
How your brain works	21	JI 10	TOTAL
How your brain works	21	10	39
How you argost rood	17	10	59
How some animals invo during one winter	21	10	35
How some animals see in a marging	20	13	22
How dogs make good pees	22	10	20
How Fish birds fly	10	10	21
How form animals are useful	10	91	19
How Tarm onenous are aborat			10
Sup-Total	151	110	261
PLANT INTERESTS			
Why leaves change color in the fell	8	12	20
How to raise plants at home	4	14	18
How plants obtain food	5	12	17
How to tell one tree from another	9	7	16
How to tell one flower from another	4	11	15
How to take care of flowers	3	11	14
How stems, roots, and leaves do their work	5	8	13
How to grow your own vegetables	3	7	10
Sub-Total	41	82	123
Grand-Total	192	192	384

Analysis: Sixty-eight per cent of the interests are animal interests. This constitutes a significant preference for animals. The highest ranking plant interest exceeds only the lowest ranking animal interest.

Table 21. Plant and Animal Interests Listed in the Order of Rank Established by the Boys of the Urban Junior High Schools and High Schools. Fifteen Boys

	Brookline	Carter	Sayles	Watertown	Morton	Totals
ANIMAL INTERESTS						
How some animals live during the winter How fish breathe underwater How birds fly Why dogs make good pets How some animals see in dim light How you digest food How your brain works How farm animals are useful	22 19 17 19 18 19 16 14	19 16 22 22 17 15 17 16	25 23 21 19 24 19 21 23	20 22 20 17 16 17 13 15	17 22 19 20 21 21 21 21 10	103 102 99 97 96 91 88 78
Sub-Total	144	144	175	140	151	754
PLANT INTERESTS	<u> </u>					
How plants obtain food	7	8	3	11	5	34
Why leaves change color in the fall	10	6	3	6	8	33
How to tell one tree from another	°	1 1	l °	6	9	29
their work	6	8	1	8	5	28
How to take care of flowers	6	6	3	3	3	21
How to grow your own vegetables	2	6	1	9	3	21
How to tell one flower from another	6	4	2	4	4	20
How to raise plants at home	3	3	1	9	4	20
-	D		1			
Sub-Total	48	48	17	52	41	206
Grand-Total	192	192	192	192	192	960

Analysis: Seventy-eight per cent of the interests by the boys are animal interests. This is a significant preference

(Concluded on next page)

Table 21. (Concluded).

for animals. The lowest ranking animal interest ranks fortyfour higher than the highest ranking plant interest.

Table 22. Plant and Animal Interests Listed in the Order of Rank Established by the Girls of the Urben Junior High Schools and High Schools. Fifteen Girls.

ANIMAL INTERESTS	Brookline	Carter	Sayles	Watertown	Morton	Totals
How some animals live during the winter How birds fly How some animals see in dim light How fish breathe underwater How your brain works Why dogs make good pets How you digest food How farm animals are useful	24 19 20 16 16 23 13 24	7 10 9 10 12 2 14 1	16 11 9 16 14 9 10 7	23 25 23 21 13 24 10 23	18 12 10 18 13 18 9	88 77 73 73 73 71 65 64
Sub-Total	155	65	92	162	110	584
Why leaves change color in the fall How to tell one tree from another How to raise plants at home How plants obtain food How to tell one flower from another Eow to take care of flowers How stems, roots, and leaves do their work How to grow your own vegetables	7 6 4 3 7 5 3 2	19 18 15 13 14 15 18 15	12 14 13 15 12 12 10 12	4 4 3 5 3 4 4 3	12 7 14 12 11 11 8 7	54 49 49 48 47 47 47 43 39
Sub-Total	37	127	100	30	82	376
Grand-Total	192	192	192	192	192	960

Analysis: Sixty-one per cent of the interests by the girls of the urban schools are animal interests. This constitutes a significant preference. The highest ranking plant interest ranks ten lower than the lowest ranking animal interest.

Table	23.	Plant and Animal I	interests I	Listed	in the	Order of	Rank
		Established by the	Pupils of	the Ur	ban Jun	ior High	Schools
		and High Schools.	Fifteen	Boys a	nd Fift	een Girl	S,

	Brookline	Carter	Sayles	Watertown	Morton	Totals
ANIMAL INTERESTS How some animals live during the wint How birds fly How fish breathe underwater How some animals see in dim light Why dogs make good pets How your brain works How your brain works How you digest food How farm animals are useful	er46 36 35 38 42 32 32 38	26 32 26 26 24 29 29 17	41 32 39 33 28 35 29 30	43 45 43 39 41 26 27 38	35 31 32 33 33 39 39 19	191 176 175 169 168 161 156 142
Sub-Total	299	209	267	302	261	1338
Why leaves change color in the fall How plants obtain food How to tell one tree from another How stems, roots, and leaves do their work How to raise plants at home How to take care of flowers How to tell one flower from another How to grow your own vegetables	17 10. 14 9 7 11 13 4	25 21 25 26 18 21 18 21	15 18 17 11 14 15 14 13	10 16 6 12 12 7 7 12	20 17 16 13 18 14 15 10	87 82 78 71 69 68 67 60
Sub-Total	85	175	117	82,	123	582
Grand-Total	384	384	884	384	384	1920

Analysis: Seventy per cent of the interests by the pupils of the urban schools are animal interests. This is a significant preference for animals. The highest ranking animal interests rank very high. The highest ranking plant interest is fifty-five lower than the lowest ranking animal interest.

Table 24. Plant and Aminal Interests Listed in the Order of Rank Established by the Pupils of Mission High School in Roxbury, Mass. Three Boys and Three Girls.

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How your brain works	12	23	35
How some animals live during the winter	19	14	33
How you digest food	11	20	31
How some animals see in dim light	14	16	30
Why dogs make good pets	16	14	30
How fish breathe underwater	10	17	27
How birds fly	10	16	26
How farm animals are useful		15	22
Sup-Total	99	135	234
PLANT INTERESTS			
How plants obtain food	14	14	28
How stems, roots, and leaves do their work	10	15	25
Why leaves change color in the fall	14	8	22
How to take care of flowers	14	6	20
How to tell one tree from another	11	6	17
How to raise plants at home	11	3	14
How to tell one flower from another	12	2	14
How to grow your own vegetables	7	3	10
Sub-Total	93	57	150
Grand-Total	192	192	384

Analysis: Sixty-one per cent of the interests by the pupils at Mission High School in Roxbury are animal interests. This is a significant preference. The highest ranking plant interest ranks sixth as compared to the animal interests.

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How some animals live during the winter	20	11	31
How your brain works	22	9	31
How some animals see in dim light	20	9	29
How you digest food	19	10	29
Thy dogs make good pets	16	11	27
low birds fly	24	1	25
low fish breathe underwater	14	3	17
low farm animals are useful	12	3	15
Sup-Total	147	57	204
PLANT INTERESTS			
low to take care of flowers	4	21	25
low stems. roots. and leaves do their work	6	18	24
Thy leaves change color in the fall	7	16	23
Iow plants obtain food	6	17	23
low to tell one tree from another	9	14	23
low to grow your own vegetables	4	17	21
low to raise plants at home	4	17	21
low to tell one flower from another	5	15	20
<u> </u>			
Sub-Total	45	135	180
Grand-Total	192	192	384

Table 25. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils at Sharon High School. Three Boys and Three Girls.

Analysis: The pupils at the Sharon High School show slight preference for animals. The highest ranking plant interest exceeds the lowest ranking plant interest by five. The highest ranking plant interest ranks number six as compared to the animal interests.

Table 26. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils of East Providence Central Junior High School. Three Boys and Three Girls.

		1	1
ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How fish breathe underwater	23	18	41
Why dogs make good pets	23	17	40
How birds fly	22	17	39
How you digest food	22	17	39
How some animals live during the winter	20	17.	37
How some animals see in dim light	21	16	37
How farm animals are useful	17	18	35
How your brain works	15	19	34
Sup-Total	163	139	302
PLANT INTERESTS			
How plants obtain food	6	9	15
How to raise plants at home	6	8	14
How stems, roots, and leaves do their work	4	8	12
How to take care of flowers	2	9	11
Why leaves change color in the fall	3	6	9
How to tell one flower from another	2	6	8
How to tell one tree from another	2	5	7
How to grow your own vegetables	4	2	6
Sub-Total	29	53	82
Grand-Total	192	192	384

Analysis: The pupils at the East Providence Central Junior High School show a significant preference for animals. Seventy-eight per cent of the interests are animal interests. The lowest ranking animal interest exceeds the highest ranking plant interest by nineteen.

Table 27. Plant and Animal Interests Listed in the Order of Rank Established by the Boys of the Urban-Fringe Schools. Nine Boys.

Management of the second se	in the second	in the second second		-
ANIMAL INTERESTS	East Providence	Sharon	Mission	Totals
How some animals live during the winter How birds fly Why dogs make good pets How some animals see in dim light How you digest food How your brain works How fish breathe underwater How farm animals are useful	20 22 23 21 22 15 23 17	20 24 16 20 19 22 14 12	19 10 16 14 11 12 10 7	59 56 55 55 52 49 47 36
Sub-Total	163	147	99	409
How plants obtain food Why leaves change color in the fall How to tell one tree from another How to raise plants at home How stems, roots, and leaves do their work How to take care of flowers How to tell one flower from another How to grow your own vegetables	6 3 2 6 4 2 2 4	6 7 9 4 6 4 5 4	14 14 11 11 10 14 12 7	26 24 22 21 20 20 19 15
Sub-Total	29	45	93	167
Grand-Total	192	192	192	576

Analysis: Seventy-one per cent of the interests by the boys are animal interests. This constitutes a significant preference. The highest ranking plant interest is ten lower than the lowest ranking animal interest.

Table 28. Plant and Animal Interests Listed in the Order of Rank Established by the Girls of the Urban-Fringe Schools. Nine Girls.

			<u> </u>	ſ
ANIMAL INTERESTS	East Providence	Sharon	Mission	Totals
How your brain works How you digest food Why dogs make good pets How some animals live during the winter How some animals see in dim light How fish breathe underwater How farm animals are useful How birds fly	19 17 17 16 18 18 18	9 10 11 11 9 3 3 1	23 20 14 14 16 17 15 16	51 47 42 42 41 38 36 34
Sub-Total	139	57	135	331
How stems, roots, and leaves do their work How plants obtain food How to take care of flowers Why leaves change color in the fall How to raise plants at home How to tell one tree from another How to tell one flower from another How to grow your own vegetables	89968562	18 17 21 16 17 14 15 17	15 14 6 8 3 6 2 3	41 40 36 30 28 25 23 22
Sub-Total	53	135	57	245
Grand-Total	192	192	192	576

Analysis: Fifty-seven per cent of the interests by the girls are animal interests. This indicates a preference for animals. The highest ranking plant interest ranks fifth as compared to the animal interests.

Table 29. Plant and Aminal Interests Listed in the Order of Rank Established by the Pupils of the Urban-Fringe Schools. Nine Boys and Nine Girls.

ANIMAL INTERESTS	East Providence	Shar on	Mission	Totals
How some amimals live during the winter How your brain works How you digest food Why dogs make good pets How some animals see in dim light How birds fly How fish breathe underwater How farm animals are useful	37 34 39 40 37 39 41 35	31 31 29 27 29 25 17 15	33 35 31 30 26 27 22	101 100 99 97 96 90 85 72
Sub-Total	302	204	234	740
PI.ANT INTERESTS				
How plants obtain food How stems, roots, and leaves do their work How to take care of flowers Why leaves change color in the fall How to raise plants at home How to tell one tree from another How to tell one flower from another How to grow your own vegetables	15 12 11 9 14 7 8 6	23 24 25 23 21 23 20 21	28 25 20 22 14 17 14 10	66 61 56 54 49 47 42 37
Sub-Total	82	180	150	412
Grand-Total	384	384	384	1152

Analysis: Sixty-four per cent of the pupils of the urban-fringe schools chose animal interests. This constitutes a significant preference. The highest ranking plant interest is six less than the lowest ranking animal interest.

Table 30.	Plant and Animal Interests Listed in Order of Rank
	Established by the Pupils of Plymouth Junior High

Three Boys and Three Girls.

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How fish breathe underwater How you digest food How birds fly How your brain works How some animals see in dim light How some animals live during the winter Why dogs make good pets How farm animals are useful	222221 222221 1226	209 197 209 197 192 192 14	440 339988 333 355 30
Sup-Total	162	140	302
PLANT INTERESTS	0		
How to grow your own vegetables How to raise plants at home How plant obtain food How stems, roots, and leaves do their work How to take care of flowers Why leaves change color in the fall How to tell one tree from another How to tell one flower from another	11 9 4 3 0 1 2 0	53679877	16 12 10 10 9 9 9 7
Sub-Total	30	52	82
Grand-Total	192	192	384

Analysis: Seventy-eight per cent of the interests chosen by the pupils at the Plymouth Junior High School are animal interests. This is a significant preference. The lowest ranking animal interest exceeds the highest ranking plant interest by fourteen. Some of the animal interests rank very high.

Table 31.	Plant and Animal	Interests	Listed in	the Order of
	Rank Established	by Pupils	at Ipswich	High School.
	Three Boys and Th	hree Girls.	•	3

ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How your brain works	22	23	45
How fish breathe underwater	22	16	38
How some animals live during the winter	22	14	36
Why dogs make good pets	21	14	35
How some animals see in dim light	20	14	34
How you digest food	17	16	33
How birds fly	19	5	24
How farm animals are useful	18	5	23
Sup-Total	161	107	2 68
PLANT INTERESTS			
How to take some of flowers		177	0.5
How to raise plents at home	2	16	40
How to tell one flower from another	2	15	17
How to tell one tree from another	7	8	15
How plants obtain food	2	12	14
How to grow your own vegetables	4	6	10
How stems. roots. and leaves do their work	4	6	10
Why leaves change coler in the fall	2	6	8
Sub-Total	31	85	116
Grand-Total	192	192	384

Analysis: The pupils at the Ipswich High School show a significant preference for animals. Sixty-nine per cent of the interests are animal interests. The highest ranking plant interest ranks number seven as compared to the animal interests. The highest ranking animal interest ranks very high.

	High School. Three Boys and Thr	ee Girls.	į.	.
	ANIMAL INTERESTS	BOYS	GIRLS	TOTAL
How some How some Why dogs	animals live during the winter animals see in dim light make good pets	23 19 16	15 11 13	38 30 29

Table 32. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils at Wareham High School. Three Boys and Three Girls.

How your brain works

How fish breathe underwater

How birds fly How you digest food How farm animals are useful	20 14 15	7 1 1 8	27 25 23
Sup-Total	141	86	227
PLANT INTERESTS			
How stems, roots, and leaves do their work How plants obtain food Why leaves change color in the fall How to tell one tree from another How to take care of flowers How to raise plants at home How to grow your own vegetables How to tell one flower from another	10 9 9 10 2 2 4 5	15 14 11 10 17 16 13 10	25 23 20 20 19 18 17 15
Sub-Total	51	106	157
Grand-Total	192	192	384

Analysis: The pupils at the Wareham High School show a definite preference for animals. Fifty-nine per cent of the interests are animal interests. The highest ranking plant interest ranks seventh as compared to the animal interests. 60

28

27

16

18

12

Table 33. Plant and Animal Interests Listed in the Order of Rank Established by the Boys of the Rural Schools. Nine Boys.

			1	
	Plymouth	Ipswich	Wareham	Totals
ANIMAL INTERESTS				
How some animals live during the winter How fish breathe underwater How your brain works Why dogs make good pets How birds fly How some animals see in dim light How you digest food How farm animals are useful	19 23 22 23 20 18 21 16	22 22 21 19 20 17 18	23 18 16 16 20 19 14 15	64 63 60 59 57 52 49
Sub-Total				
	162	161	141	46 4
PLANT INTERESTS				
How to grow your own vegetables How to raise plants at home How stems, roots, and leaves do their work How plants obtain food How to tell one tree from another Why leaves change color in the fall How to tell one flower from another How to take care of flowers	11 9 3 4 2 1 0	8 2 7 2 4 4 2 2	10 9 10 9 4 2 5 2	29 20 20 15 10 7 4
Sub-Total	30	31	51	112
Grand-Total	192	192	192	576

Analysis: Eighty per cent of the interests chosen by the boys of the rural schools are animal interests. This indicates a very strong interest for animals. The highest ranking animal interests rank very high. In fact, all of the animal interests rank high.

Table 34. Plant and Animal Interests Listed in the Order of Rank Established by the Girls of the Rural Schools. Nine Girls.

ANIMAL INTERESTS	Plymouth	Ipswich	Wareham	Totals
How your brain works How some animals live during the winter How you digest food How fish breathe underwater How some animals see in dim light Why dogs make good pets How birds fly How farm animals are useful	17 19 20 20 12 19 14	23 14 16 16 14 14 5 5	12 15 11 9 11 13 7 8	52 48 46 45 45 39 31 27
Sub-Total	140	107	86	333
How to take care of flowers How to grow your own vegetables How to raise plants at home How plants obtain food Why leaves change color in the fall How to tell one tree from another How stems, roots, and leaves do their work How to tell one flower from another	953687777	12 17 15 6 6 8 6	17 15 14 11 16 13 10 10	38 37 32 32 30 26 25 23
Sub-Total	52	85	106	243
Grand-Total	192	192	192	576

Analysis: Fifty-eight per cent of the interests by the girls are animal interests. This indicates a definite preference for animals. The highest ranking plant interest ranks seventh as compared to the animal interests.
Table 35. Plant and Animal Interests Listed in the Order of Rank Established by the pupils of the Rural Schools. Nine Boys and Nine Girls.

Contraction of the local division of the loc	the state of the s	the second se	
Plymouth	Ipswich	Wareham	Totals
39 38 43 38 35 40 39 30	45 36 38 34 35 33 24 23	28 38 27 30 29 25 27 23	112 112 108 102 99 98 90 76
302	268	227	79 7
16 12 10 9 9 9 7	25 17 15 14 10 10 8	25 23 20 19 18 17 15	66 52 47 45 42 37 36 30
82	116	167	355
384	384	384	1152
	Plymouth 39 38 43 38 40 39 30 302 16 12 10 10 9 9 9 7 82 384	Plymouth Ipswiich 39 45 38 36 43 38 35 35 40 33 39 24 302 268 16 25 12 17 10 17 10 15 9 10 9 10 7 8 82 116 384 384	Plymouth Ipswich Warreham 39 45 28 38 36 38 35 35 29 40 35 25 39 24 27 302 268 227 302 268 227 16 25 25 12 17 23 10 17 20 10 15 20 9 14 19 9 10 17 7 8 15 62 116 157 384 384 384

Analysis: Sixty-nine per cent of the interests by the pupils of the rural schools are animal interests. This indicates a very significant preference for animals. Interests two to eight in the animal kingdom are more than twice as great as interests two to eight in the plant kingdom.

Table 36. Plant and Animal Interests Listed in the Order of Rank Established by the Boys of the Junior High Schools and High Schools Surveyed. Thirty-three Boys.

		and the second second second	1	
ANIMAL INTERESTS	Urban	Urban-Fringe	Rural	Totals
How some animals live during the winter How birds fly How fish breathe underwater Why days make good pets How some animals see in dim light How your brain works How you digest food How farm animals are useful	103 99 102 97 96 88 91 78	59 56 47 55 55 49 52 36	64 59 63 60 57 60 52 49	226 214 212 212 208 197 195 163
Sub-Total	754	409	464	1627
How plants obtain food How stems, roots, and leaves do their work How to grow your own vegetables Why leaves change color in the fall How to raise plants at home How to tell one tree from another How to tell one flower from another How to take care of flowers	34 28 21 33 20 29 20 21	26 20 15 24 21 22 19 20	15 20 29 7 20 10 7 4	75 68 65 64 61 61 46 45
Sub-Total	206	167	112	485
Grand-Total	960	ō76	576	2112

Analysis: Seventy-seven per cent of the interests by the boys in the schools surveyed are animal interests. This certainly shows a very significant preference for animals. The animal interests rank very high.

Table 37. Plant and Animal Interests Listed in the Order of Rank Established by the Girls of the Junior High Schools and High Schools Surveyed. Thirty-three Girls.

the second se				<u></u>
8	Urban	Urban-F	Rural	Total
10		ri	100 H	0
		ng		
ANIMAL INTERESTS				
How some animals live during the winter	88	42	48	178
How your brain works	73	51	52	176
How some animals see in dim light	73	41	45	159
How you digest food	65	47	46	158
How Iish breathe underwater	73	38	45	156
Why dogs make good pets	71	42	39	152
How birds ily	17	34	31	142
How farm animals are useful	04	30	21	127
Sub-Total	EQA	771	777	1040
8	504	331	000	1248
PLANT INTERESTS			1	
How to take care of flowers	47	36	38	121
How plants obtain food	48	40	32	120
Why leaves change color in the fall	54	30	30	114
How stems, roots, and leaves do their work	43	41	25	109
How to raise plants at home	49	28	32	109
How to tell one tree from another	49	25	26	100
How to grow your own vegetables	· 39	22	37	98
How to tell one flower from another	47	23	23	93
		4		
Sub-Total	376	245	243	864
Grand-Total	960	576	576	2112

Analysis: Fifty-nime per cent of the total interests chosen by the girls are animal interests. This indicates a definite preference for animals.

Table 38. Plant and Animal Interests Listed in the Order of Rank Established by the Pupils of the Junior High Schools and High Schools Surveyed. Sixty-six Pupils.

1			1	C
ANTWAT INTERPORT	Urban -	Urban-Fringe	Rural	Totals
How some animals live during the winter How your brain works How fish breathe underwater How some animals see in dim light Why dogs make good pets How birds fly How you digest food How farm animals are useful	191 161 175 169 168 176 156 142	101 100 85 96 97 90 99 72	112 112 108 102 99 90 98 76	404 373 368 367 364 356 353 290
Sub-Total PLANT INTERESTS	1338	740	797	2875
How plants obtain food Why leaves change color in the fall How stems, roots, and leaves do their work How to raise plants at home How to take care of flowers How to grow your own vegetables How to tell one tree from another How to tell one flower from another	82 87 71 69 68 60 78 67	66 54 61 49 56 37 47 42	47 37 45 52 42 66 36 30	195 178 177 170 166 163 161 139
Sub-Total	582	412	355	1349
Grand-Total	1920	1152	1152	4224

Analysis: Sixty-eight per cent of the total interests are animal interests. This indicates a significant preference for animals. The animal interests rank very high as compared with the plant interests.

CHAPTER V

SUMMARY AND CONCLUSIONS

The results of this survey indicate a definite preference for animals at the ninth grade level of the junior high schools and high schools. There were 515 boys and girls tested in this study.

Phase I. Explanation of Tables (1-15) -- Tables (1,2,3,4,5, 7,8,9,11,12,13) are all alike in form. Each table is divided vertically into three major sections: Boys, Girls, Total. The major section at the left is divided into three columns. The first column shows the number of animal interests that each boy checked on the testing instrument that he was given. The second column shows the number of plant interests that each boy checked on the testing instrument. The third column shows the total number of animal and plant interests. The major section titled "Girls" is treated in the same way as the section "Boys." The major column at the right shows the total of the other sections. The preference total line near the lower part of the tables shows the total number of interests, plant and animal, chosen by all the pupils of the school. The lower line, a percentage preference, shows what per cent of the interests chosen were animal interests and what were plant interests. The name of the school is given in the table title.

Tables (6,10, and 14) are alike. These are divided into two major sections. The major section at the left (Schools) shows the schools and the number of pupils by sex. The major section at the right shows the totals of all the schools in the area; table 6 for the urban area, table 10 for the urban-fringe area, and table 14 for the rural area.

Table 15 is the same as tables (6,10, and 14). This table is the total of all the other tables. The section on the left lists the total areas and the total number of pupils tested in each area by sex. The section at the right is a total of all the preference totals in all the areas.

<u>Summary and Conclusions</u>.-- In this study, it was found that all but one school had a preference percentage of 60% or higher favoring animals. That school was Mission High School of Roxbury with a preference percentage of 59%.

The boys were very much interested in animals. Only in one school was the percentage of interests in animals by the boys less than 60%. That was the Brockline High School and was 59.6%. The boys at the Sayles Junior High School had a preference percentage of 88% in favor of animals, at Plymouth 81% and at Ipswich 76%.

The girls showed a preference for animals, but it was not as strong as the interests in animals by the boys.

At the Carter Junior High School and at the Sharon High School, the girls were more interested in plants than in animals. The preference percentage of the girls at the Carter Junior High School was fifty-eight per cent in favor of plants and at the Sharon High School, the preference percentage was 60% in favor of plants.

Among the urban schools, the school having the highest preference percentage for animals was Watertown East Junior High School. This school had a percentage of 68%. The urban school having the lowest percentage preference was the Carter Junior High School in Chelsea. This school had a preference percentage of 60%.

A study of the urban-fringe schools showed a preference percentage of 67% in favor of animals. The interest of the boys in animals was 17% higher than the interest by the girls. The urban-fringe school having the highest preference percentage for animals was East Providence Central Junior High School with a percentage of 69%. The urban-fringe school having the lowest preference percentage was Mission High School of Roxbury. The percentage was fifty-nine.

The pupils of the rural schools showed more interest in animals than the pupils of the urban or urban-fringe schools. The pupils of the rural schools showed a preference percentage of 70% for animals. The highest ranking rural

school was Plymouth with a preference percentage of 74% for animals. The lowest ranking rural school was Wareham with a preference percentage of 61% for animals.

To summarize this study, the total figures indicate a significant preference for animals. It is to be remembered that a 60 per cent to 40 per cent difference in favor of animals is to be considered significant. The totals of all the schools showed that the students had a percentage preference of 67% for animals.

<u>Phase II</u>. Explanation of Tables.-- Tables (16,17,18,19, 20,24,25,26,30,31 and 32) are the same type. They are divided into four major columns. The major column at the left shows the interests listed in the order of rank established by the pupils in the schools appearing in the table title, three boys and three girls, selected at random. The other columns at the right show the number of boys and girls that preferred each interest. Their interests are combined in the column titled total. Tables (12,22,23,27,28,29,33,34,35) are alike in form. They contain the results of both sexes and all the pupils combined in each area.

Tables (36,37) have four major columns, a column for each area and a total column which sums up the areas for each sex.

Table 38 is a totaling of all the areas and all the pupils of the study for their preference for each interest.

<u>Summary and Conclusions</u>.-- The purpose of the study is to establish an order of rank for preference of the different interests listed. The reader may wish to know how the pupils of each school ranked each interest. This study has been done according to areas, according to schools, and then according to a total of all the areas.

Among the eleven schools surveyed, first place for animal interests went to four different interests. "How some animals live during the winter" was in first place in four schools. "How your brain works" was in first place in three schools. "How birds fly" and "How fish breathe underwater" were in first place in two schools. Among the interests that were ranked the lowest, "How farm animals are useful" was in last place in seven schools, "How your brain works" was in last place in two schools, "How you digest food" and "Why dogs make good pets" each were in last place in one school.

Among the highest ranking plant interests, "How plants obtain food" ranked first in four schools. "How to take care of flowers," "Why leaves change color in the fall," and "How stems, roots, and leaves do their work" ranked first in two schools. "How to grow your own vegetables" ranked highest in one school. Among the lowest ranking plant interests, "How to grow your own vegetables" and "How to tell one flower from another" each ranked last in four schools. "How stems, roots,

and leaves de their work," "How to tell one tree from another," and "Why leaves change color in the fall" each ranked last in one school.

In conclusion, the final results show that all of the animal interests of the total number of pupils (table 38) rank higher than all of the plant interests. This indicates that the pupils at the ninth grade level are more interested in animals.

This study indicates that pupils' interests have not changed since the time of Finley in 1921. In 1921 pupils were more interested in animals than in plants.

<u>Suggestions for further research</u>.-- The interests of a large group could be studied before a biology course is given, while it is being given, and after it has been given to find out if the interests of the students change or is affected by the biology course. One group could be studied for three years; that is, in the ninth grade, in the tenth grade, and in the eleventh grade. Three different groups could be studied at the same time. One group in the ninth grade, one in the tenth grade, and one in the eleventh grade.

A similar study like that which the writer did could be conducted at the seventh, eighth, and ninth grade levels to find out if the interests in plants and animals of junior high school pupils change.

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APPENDIX

Preferences and Percentages of Interests in Plants Established by Two Hundred and Two Eight and Ninth Grade Pupils

Rank	Categories	No. of Interests	Per Cent
1.	Growth and Care of Plants	178	47
2.	Raising Plants for Beauty	68	18
3.	Anatomy of Plants	51	13.5
4.	Identification of Plants	41	11
5.	Usefulness of Plants	17	4.5
6.	Prehistoric Plants	10	2.5
7.	Microscopic Plants	7	2
8.	Diseases of Plants	4	1
9.	Comparison of Plants	2	0.5
		378	100%

Preferences and Percentages of Interests in Plants Established by Two Hundred and Two Eighth and Ninth Grade Pupils

Ran	k Categories	Interests of boys	%	Interests of girls	%	Total
1.	Growth and Care of Plants	89	50	89	50	178
2.	Raising Plants for Beauty	22	32	46	68	68
3.	Anatomy of Plants	25	49	26	51	51
4.	Identification of Plants	17	41	24	59	41
5.	Usefulness of Plants	13	76	4	24	17
6.	Prehistoric Plants	4	40	6	6 0	10
7.	Microscopic Plants	4	57	3	43	7
8.	Diseases of Plants	l	25	3	75	4
9.	Comparison of Plants	_1	50	1	50	2
		176		202		378

Preferences and Percentages of Interests in Animals Established by Two Hundred and Two Eighth and Ninth Grade Pupils

Ran	k Categories	NO. OF Interests	Per Cent
1.	How Animals Live	232	36
2.	Animal Anatomy	127	20
3.	The Human Body	92	14
4.	Usefulness of Animals	75	12
5.	Identification of Animals	49	7
6.	Prehistoric Animals	38	6
7.	Microscopic Animals	12	2
8.	Comparison of Animals	12	2
9.	Diseases of Animals	9	1
		646	100%

Preferences and Percentages of Interests in Animals Established by Two Hundred and Two Eighth and Ninth Grade Pupils

Rank	Categories	Interests of boys	%	Interests of girls	%	Total
1. How	Animals Live	121	52	111	48	232
2. Anim	nal Anatomy	60	47	67	5 3	127
3. The	Human Body	52	57	40	43	92
4. Usef	Culness of Animal	s 45	60	30	40	75
5. Ider	ntification of An	imals 31	63	18	37	49
6. Preh	nistoric Animals	14	37	24	63	38
7. Mice	oscopic Animals	10	83	2	17	12
8. Comj	parison of Animal	s 3	25	9	75	12
9. Dise	eases of Animals	4	44	5	56	9
		340		306		646

Are	a: Animals		
	Category		Itom
a. :	How Animals Live	3	
		1.	How some animals live during the winter
		2.	How fish breathe underwater
Ъ.	Animal Anatomy		
000	•	3.	How birds fly
		4.	How some animals see in dim light
0.	The Human Body		3
1000	-	5.	How your brain works
		6.	How you digest food
đ.	Usefulness of	0.000	
	Animals	7.	How farm animals are useful
		8.	Why dogs make good pets
	a Dianta		
¥1.6	a: Flancs		
	Category		Ttem
	00005019		
8.	Growth and Care	9	
63	of Plants	1.	How to grow your own vegetables
		2.	How plants obtain food
b.	Raising Plants		
	for Beauty	3.	How to raise Plants at home
		4.	How to take care of flowers
C.	Plant Anatomy		
-		5.	How stems, roots, and leaves do their work

- 6. Why leaves change color in the fall
 d. Identification
 of Plants 7. How to tell one flower from another
 - 8. How to tell one tree from another

		Form es
Name	Age_School	Grade
Воу ()	or Girl () Town	Teacher
INSTRUCT school p Therefor parenthe Check ON	TIONS. Fill in the above informa oupil has are listed below. Thes re, all interests will appear mor esis at the left of the interest NLY ONE of each pair, but be sure	tion. Some interests that a junior high e interests are matched in different ways. e than once. Place a check mark in the that you would like to learn about. to make a choice in all pairs.
WHICH	I WOULD YOU LIKE TO LEARN ABOUT:	
l. { }why	dogs make good pets leaves change color in the fall	16.()how to grow your own vegetables)why dogs make good pets
2. { }how how	to tell one tree from another some animals see in dim light	17. ()how farm animals are useful)how to grow your own vegetables
3. ()how how	farm animals are useful to raise plants at home	18.()how to tell one tree from another)why dogs make good pets
4. { how how	to tell one flower from another your brain works	19.() how you digest food) why leaves change color in the fall
5. { }how why	some animals see in dim light leaves change color in the fall	20. ()how plants obtain food)how farm animals are useful
6. { }how how	to tell one tree from another fish breathe underwater	21.()how you digest food)how to take care of flowers
7. ()how how	your brain works to grow your own vegetables	22. ()how to raise plants at home how fish breathe underwater
8. ()how	to tell one flower from another birds fly	23.()how farm animals are useful)how stems, roots, and leaves do their work
9. { }how	fish breathe underwater to tell one flower from another	24. ()how to take care of flowers)how birds fly
10. ()how)how	to grow your own vegetables fish breathe underwater	25. ()how your brain works)how stems, roots and leaves do their work
ll. { }how how	your brain works to raise plants at home	26.()how plants obtain food)how birds fly
12.()how	stems, roots, and leaves do	27.()how you digest food
()how	fish breathe underwater	()how to tell one flower from another
13. { }how how	farm animals are useful to tell one tree from another	28. ()why leaves change color in the fall)how your brain works
14. { }how how	to take care of flowers farm animals are useful	29 ()why dogs make good pets)how to take care of flowers
15. { }how how	some animals see in dim light plants obtain food	30. ()how to take care of flowers.)how your brain works

Form 3b

- 31. ()how birds fly how stems, roots, and leaves do their work
- 32. ()how to grow your own vegetables)how you digest food
- 33.()how some animals live during the winter () how to tell one tree from another
- 34.()how to take care of flowers ()how some animals live during the winter
- 35.()how birds fly how to grow your own vegetables
- 36.()how stems, roots, and leaves do their work () why dogs make good pets
- 37. ()how fish breathe underwater)why leaves change color in the fall
- 38.()how to raise plants at home)why dogs make good pets
- 39. ()why dogs make good pets)how to tell one flower from another
- 40. ()how plants obtain food ()how some animals live during the winter
- 41.()why dogs make good pets)how plants obtain food
- 42.()how plants obtain food)how your brain works
- 43.()how birds fly ()how to tell one tree from another
- 44. ()how to raise plants at home)how you digest food
- 45.()how some animals see in dim light)how to take care of flowers
- 46.() how to tell one flower from another 63.() how some animals live during the () how farm animals are useful
- 47. ()how you digest food)how plants obtain food

- 48.()how stems, roots, and leaves do their work ()how some animals see in dim light
- 49.()how your brain works)how to tell one tree from another
- 50. ()why leaves change color in the fall)how birds fly
- 51. ()how fish breathe underwater)how to take care of flowers
- 52. ()how to tell one tree from another)how you digest food
- 53. ()How some animals live during the winter () how to raise plants at home
- 54.()how stems, roots, and leaves do their work ()how you digest food
- 55. ()how fish breathe underwater)how plants obtain food
- 56. ()how to grow your own vegetables)how some animals see in dim light
- 57. ()how birds fly)how to raise plants at home
- 58. ()why leaves change color in the fall how some animals live during the winter
- 59 ()how some animals live during the winter () how to grow your own vegetables
- 60. ()why leaves change color in the fall how farm animals are useful
- 61. ()how some animals see in dim light how to tell one flower from another
- 62.()how to tell one flower from another)how some animals live during the winter
- winter () how roots, stems, and leaves do their work
- 64. ()how to raise plants at home)how some animals see in dim light

- 2 -

ABSTRACT

A survey of pupils' interests in plants and animals at the ninth grade level has been completed. This study was done for two major reasons. One reason was to find out the interests of students who in a year or two will be taking a biology course. Since it has long been an axiom in education that students learn more easily and more readily those things in which they are interested, teachers want to know these interests. Teachers might then expend most effort on those parts of a biology course which will appeal to the students and which these students can most readily make integral parts of their living experience. By knowing these interests, the teacher can plan classroom and science fair projects.

On the other hand, we realize that the study of both plants and animals in a high school biology course is important. If the teacher knows that there is little interest in important areas in the plant and animal kingdoms, he can be prepared to modify his teaching.

The second reason was that the writer failed to uncover any studies to determine whether pupils at the ninth grade level are most interested in plants or in animals. Furthermore, since the last study to determine whether pupils at any junior high school grade level are more interested in plants or in animals was done thirty-two years ago, the writer felt that these previous studies were obsolete. In 1921, Finley found that students in grades three to eight were more interested in animals than in plants. The writer wanted to find out whether or not this interest has changed and he selected grade nine. This survey was made in schools in Rhode Island and in Massachusetts.

In constructing a test instrument, the writer began directly with the students. A group of two hundred and two eighth and ninth grade students were allowed to write freely about their interests in plants and in animals. The writer combined these interests into nine categories in the area of plants and into nine categories in the area of animals. Since the first four categories in each area constituted more than eighty per cent of the interests, the writer considered them in preparing the final instrument. The writer went back to the original papers and by a random selection chose two interests under each of the first four categories in each area. This made eight interests under each area to be used in making the final instrument. These interests were balanced as to probable pupil interests and all of the eight animal interests were matched against all of the eight plant interests. This made sixty-four pairs of interests and constituted the final instrument.

The study has two phases. The first phase was to determine whether pupils at the ninth grade level are more interested in plants or in animals. The second phase was to establish an order of rank of the interests in plants and in animals by a sample of the pupils tested selected at random. The interest forms of three boys and three girls from each school were selected at random.

The results of this study indicate a definite preference for animals at the ninth grade level of the schools surveyed. There were 515 boys and girls tested in this study. The boys were more interested in animals than were the girls. Seventythree per cent of the interests of the boys were animal interests, whereas fifty-seven per cent of the interests of the girls were animal interests.

Among the urban schools, the school having the highest preference percentage for animal interests had a percentage of 68%. The urban school having the lowest preference percentage for animals had a percentage of 60%.

A study of the urban-fringe schools showed a preference percentage of 67% in favor of animals. The interests of the boys in animals was 17% higher than the interests by the girls. The urban-fringe school having the highest preference percentage for animals had a percentage of 69%. The urbanfringe school having the lowest preference percentage for animals had a percentage of 59%.

The pupils of the rural schools showed more interest in animals than the pupils of the urban or urban-fringe schools. The pupils of the rural schools had a preference percentage of 70% for animals. The highest ranking rural school had a preference percentage of 74% for animals. The lowest ranking rural school had a preference percentage of 61% in favor of animals.

The reader may wish to know how the pupils ranked the interests. Among the elven schools surveyed, first place for animal interests went to four different interests. "How some animals live during the winter," was in first place in four schools. "How your brain works" was in first place in three schools, "How birds fly" and "How fish breathe underwater" were in first place in two schools. Among the animal interests that were ranked the lowest, "How farm animals are useful" was in last place in seven schools, "How your brain works" was in last place in two schools, "How you digest food" and "Why dogs make good pets" each were in last place in one school.

Among the highest ranking plant interests, "How plants

obtain food" ranked first in four schools. "How to take care of flowers," "Why leaves change color in the fall," and "How stems, roots, and leaves do their work" each ranked first in two schools. "How to grow your own vegetables" ranked highest in one school. Among the lowest ranking plant interests, "How to grow your own vegetables" and "How to tell one flower from another" each ranked last in four schools. "How stems, roots, and leaves do their work," "How to tell one tree from another," and "Why leaves change color in the fall" each ranked last in one school.

In conclusion, the final results showed that all of the animal interests of the total number of pupils ranked higher than all of the plant interests. This indicated that the pupils at the ninth grade level were more interested in animals.

This study indicated that pupils' interests have not changed since the time of Finley in 1921. In 1921, pupils were more interested in animals than in plants.