An Evaluation of the Adult Short Course Program of Longwood Gardens

by

Gary Gordon Gerlach

ACKNOWLEDGEMENTS

The author would like to sincerely thank the Longwood Foundation for providing the fellowship which permitted him to seek the degree of Master of Science in the Longwood Program.

A special note of thanks is due Mrs. J. Folsom Paul, Supervisor of the Longwood Gardens Education Office, and her staff for their generous help in completing this study.

Appreciation must be expressed to my advisory committee for their understanding and direction. This committee consisted of Dr. Russell J. Seibert, Dr. R. W. Lighty, Dr. Ralph Barwick, Dr. Ray Smith, and Dr. Sam Gwinn.

Also I thank my wife, Kathryn, for her patience, moral support, and help in completing this paper.

TABLE OF CONTENTS

LIST OF TABLES

ABSTRACT

An Evaluation of the Adult Short Course Program of
Longwood Gardens
by Gary Gordon Gerlach

The objective of this study was to evaluate the 45 short courses that had been offered by Longwood Gardens, Kennett Square, Pennsylvania, between March, 1964 and June, 1968. The courses consisted of one to twelve meetings and covered various subjects related to horticulture. A total of 22 instructors was involved. Information was gathered by a questionnaire requiring checks and short answers. The questionnaires were mailed to 1098 participants of which 823, or 75 percent, were returned.

The basic nineteen-point questionnaire covered personal data, general horticultural information, and course suggestions. Questionnaires were amended with additional pages of questions concerning the particular courses in which a person had enrolled.

Consideration is given to the individual's failing to complete courses, and to his attitudes toward various aspects of instruction. The degree of success of each course was based upon the attitudes and satisfaction expressed by the participants, both in their written remarks and through the collective data.

INTRODUCTION

The objective of this study was to evaluate the educational short courses presented at Longwood Gardens. The intent was to develop a mail questionnaire that would register the program participants' satisfaction and conceived learning.

Evaluation is an important part of every educational program. An evaluation benefits both the educator and the participant. For the educator it provides a foundation on which to plan future courses, while improvement in existing courses is facilitated by the recognition of weak and unsatisfactory areas. From the participants' view it provides a definite channel for feedback concerning the success and adequacy of instruction. Educators of adults must realize that organizing programs solely upon the basis of expediency or trial-and-error is expensive in terms of time, money, and the reputation of adult education.[1]

Significantly, the literature contains very few evaluative studies dealing with short-term adult education activities. Wilder states that there is "...no neatly definable universe under the heading of adult education research, especially in the area of evaluation."[2]

A completly accurate evaluation is impossible because of the many variables involved. Each participant, his attitudes and interpretations create the variables. "You can't please everyone" nor can one ask a question of all participants that will be interpretated the same by each person. The elimination of statements with multiple interpretations increases the validity of the evaluation. Therefore any evaluation must be clearly recognized as an attempt to objectively catagorize a range of subjective attitudes into a few meaningful conclusions.

Often the emphasis of the educator of adults is on the operational aspects of his program. His evaluations are based solely upon the number of participants, and he tends to rate the effectiveness by noting that "It works!" The actual question is not whether it works or not but whether it works better than some other way.[3]

Methods used in evaluation may vary from casual observations and attendance counts to formal, scientific studies by professionals. Probably the most noted technique for evaluation is the Kropp--Verner Attitude Scale.[4] This involves the participant's checking different statements with which he agrees, i.e., "Exactly what I wanted", "It was fair", "It didn't hold my interest", and "I leave dissatisfied". Each of the 20 statements has a numerical rating, the sum of which is the "score" that may then be compared

to other "scores". This method was not used in that it rates general attitudes and not attitudes in specific areas as instruction and subject material. The latter was felt to have more meaning and benefit in the evaluation of the Longwood Gardens' courses.

Judgement based only upon attendance is not valid as several studies have pointed out. According to Douglah and Moss[5] the only factor significantly related to participation of adults who have attained over 12 years of education is their social skills. Age, income, family, employment, et cetera, are more closely related when educational attainment is below 12 years.

Yet Brunner[6] points out that occupation, social acceptance, age, and number of children are the important factors to consider. He states that professional, technical and managerial occupations have higher rates of participation. Social acceptance was found to be more significant than income in affecting attendance. The participation of adults tends to sharply increase at age 30, then levels out, and remains fairly constant to age 50, after which a decline normally takes place. Children, especially those of pre-school age, limit the frequency and regularity of participation of their parents in adult education programs.

To begin an evaluation, the intent of the organization must be examined. K. M. Miller[7] in his "Evaluation in Adult

Education", points out that there are a number of questions to be answered in an examination. Among the points are: 1. Are the general and specific objectives of the program clear? 2. Are the needs of the students being met by the program? 3. Are the methods effective in presenting the subject matter and maximizing the learning experience of the students? These are the major questions to be answered in this paper.

The basic purpose and objective of Longwood Gardens' education program has been simply stated as :

> The Longwood Gardens Short Course Program is planned for the serious amateur gardener who wishes to learn more about plants, practical horticulture, or the botanic principles on which horticulture is based.[8]

Certain assumptions must be allowed in order to use any evaluative instrument. In this study they are:

1. A mail questionnaire can provide a reliable means of measuring attitudes.
2. Attitudes and opinions given are valid indicators of satisfaction.
3. A person's satisfaction is an acceptable basis for evaluation.

METHODS

The population involved in this study consists of persons whose names are in the files of the Longwood Gardens Education Office and who have registered for at least one short course. Longwood Gardens employees were excluded as representing a distinct population. This yielded a population of 1198 names.

A trial questionnaire was prepared and mailed in August, 1968, to a sample of 100 people from the population of 1198. The questionnaire was modified on the basis of the returns of this sample. In December, 1968, the principle mailing went out to the remaining 1098. A "reminder" letter and a duplicate questionnaire were mailed in January, 1969. to those of the 1098 who had not returned their questionnaire at that time.

On pages 7 through 12 is an actual copy of the questionnaire and related material that was mailed. Page 7 is an introductory letter using the letterhead of Dr. Russell J. Seibert, Director of Longwood Gardens. This is a brief explanation noting authorization for the study by Mrs. J. Folsom Paul, Supervisor of the Education Office, and Dr. Seibert. Each letter was personalized by typing the person's name in at the top and filling in the signature at the closing.

On pages 8 and 9 is the basic questionnaire that all received. Each was identified by a number conspicuously placed at the top right corner. This basic form was then prepared to suit one of the following classifications:

1. For participants who had taken courses, but none in past five years, only the basic questionnaire was mailed.
2. For participants who had completed one or more courses in the past five years, one to five sheets asking questions about specified courses were included. This form is on page 10. Participants having taken more than five courses received five sheets inquiring about the last five courses taken.
3. For participants whose records failed to show a completed course, the sheet on page 11 was attached to the basic questionnaire inquiring as to why they had never completed a course.

Page 12 is the reminder that accompanied the second mailing replacing the introductory letter of the first mailing. This was sent only to those who had failed to return their questionnaire.

TABLE 1a.

INTRODUCTORY LETTER TO QUESTIONNAIRE

Longwood Gardens Kennett Square Pennsylvania, 19348

Russell J. Seibert, Director

Dear

Within the past few years you have been a student in the Longwood Gardens Short Course Program. This survey, which is a project of the Longwood Program of the University of Delaware, is to evaluate those courses. The evaluation is being conducted under the guidance of Mrs. J. Folsom Paul, Educational Supervisor, and Dr. Russell J. Seibert, Director, of Longwood Gardens.

The results of this survey will affect the future planning of the Longwood Short Course Program. Your considered and frank answers will make it possible for Longwood Gardens to offer subjects, courses and schedules that may be more beneficial to all.

On the following pages, please check the appropriate answer or express your opinion as briefly as possible. Your cooperation in the effort to improve this adult educational program is very much appreciated.

Thank you,

Gary G. Gerlach

If you have never registered for a Longwood Gardens Short Course please check this blank_____, and return this form in the enclosed stamped envelope.

TABLE 1b.

BASIC QUESTIONNAIRE

No._____

LONGWOOD GARDENS SHORT COURSE EVALUATION

This questionnaire is being mailed to all who have participated in a Longwood Gardens Short Course. Please do not hesitate to make comments or criticisms that will aid in developing and improving this program. The enclosed envelope is for your convenience in returning the completed form.

1. I live in a _____house _____apartment or specify other dwelling _____.

2. The grounds surrounding my home consist of

   _____less than one-half acre

   _____one-half to one acre

   _____one to five acres

   _____over five acres

3. The above area is what percent of the following?

   ____% lawn ____% woods

   ____% gardens ____% fields, water, etc.

4. Who is employed?

   ___self ____both

   ___spouse ____neither

5. How many children of the following age groups are living at home?

   ___under 10 years ____15 to 19 years

   ___10 to 14 years ____20 years and over

6. What percent of the horticultural work is done by each?

   ____wife ____husband ____children ____hired help

7. Do you have any regular, professional help to maintain the grounds?

   ____yes ____no

TABLE 1b. - Continued

8. On the average, how many hours per week are spent working on the grounds during the growing season?_____

9. How many times do you entertain outdoors during the year?

____less than 6 ____6 to 12 ____more than 12

10. I live _____ miles from Longwood Gardens.

11. What is your highest completed year of formal education? _____

12. Age: ____under 30 ____30-39 ____40-49 ____50 and over

13. I have applied ____ times for short courses and have been accepted _____times.

14. I have been turned down for the following courses:_____ _____.

15. I would generally prefer courses to be given in the:

____morning ____afternoon ____evening

16. I would like to see future courses that are either in the general area of _____

or with the specific topic of_____.

17. To which horticultural organizations do you belong? _____ _____.

18. Have you ever failed to complete a short course?

____yes _____no

If yes, for which of the following reasons. _____health ____business _____travel ____lost interest in the course

What course was it?_____.

19. If Longwood ceased awarding certificates for the completion of courses, do you believe that it would affect registration?

____yes _____no

TABLE 1c.

COURSE QUESTIONNAIRE

No. _____

Specific Course: _____

1. Rate each:	Poor	Fair	Good	Excellent
How well was the subject covered.....	___	___	___	____
How well was your thinking stimulated by the instructor.....	___	___	___	____
How well was the material presented.....	___	___	___	____
How well did the instructor work with the students.....	___	___	___	____
How would you rate the overall effectiveness of the course.....	___	___	___	____

2. How familiar were you with the subject when you entered the course?

_____little _____moderate _____above average

3. What was your reason for taking the course?

_____general knowledge _____hobby _____profession

4. Was the course

___too elementary _____difficult

___simple _____much too difficult

___about right

5. Did the course cover the subject as you had expected?

_____yes _____no

6. Have you found the new information practical and useful?

_____yes _____no

7. Do you have any comments about this specific course?

_____

_____

TABLE 1d.

NON-COMPLETER'S FORM

No. ____

The records in the Longwood Gardens' Education Office show that you registered for a course which you did not complete. It would be helpful if you would answer the following questions.

1. I did not finish the course because of
   ___ health, travel or business related reasons
   ___ dissatisfaction with the course
2. If you checked the latter of the two above answers, was it because of the
   ___ instructor's attitude
   ___ teaching methods
   ___ the kind or amount of information wasn't what you had expected
   ___ other, please specify _____
   _____
3. Of _____ classes I attended _____ classes.
4. How familiar were you with the subject when you registered for the course?
   ___ little ___ moderate ___ above average

TABLE 1e.

REMINDER LETTER

UNIVERSITY OF DELAWARE
NEWARK, DELAWARE
19711

THE LONGWOOD PROGRAM

Dear

Recently a questionnaire was mailed to you for your evaluation of the Longwood Gardens Short Course Program. Due to the time of year the questionnaire may have been mislaid or forgotten, but I would sincerely appreciate a few minutes of your time and effort in this matter.

Thank you,

Gary G. Gerlach
Longwood Graduate Program
University of Delaware
Newark, Delaware

RESULTS

The results of the principal and "reminder" mailings were:

6.5%	- 72	questionnaires were undeliverable because of wrong addresses or the addressee had moved.
5.0%	- 55	replied that they had never registered but had only been on a "mailing list".
0.4%	- 5	replies were too late or too incomplete to be used.
62.9%	- 691	questionnaires were complete and acceptable.
74.9%	- 823	total returns

The figure of 72 undeliverable questionnaires is difficult to explain. In 1963 the mailing list of the Longwood Gardens Education Office was revised to include only those people interested in receiving short course registration forms. This procedure was to be repeated every five years. The education officemails the course registration forms twice a year. Normally six to eight forms are returned as "undeliverable" and the names of these people are removed from the list. Perhaps the greatest influence on the returning of the 72 questionnaires was that they were mailed as third class. The Longwood Gardens' materials are mailed first class thereby receiving more attention and are forwarded to the correct address.

Starting on page 14 is a summary of the returns for each question. The following discussion pertains to that table.

TABLE 2

SUMMARY OF BASIC QUESTIONNAIRE

All data presented are of the TOTAL (691) returns unless specified as the ACTIVE (502) returns, OVER-5 (113) returns or the NEVER (76) returns. OVER-5 refers to those people who have not taken a course since Spring, 1964. NEVER refers to those people who have never completed a course. Some percentages do not add to 100 percent due to rounding off to the nearest whole percent. The number was rounded to the nearest even percentage if the original fraction was one-half.

1. I live in a: house 682 (99%) apartment 9 (1%).

2. The grounds surrounding my home consist of:

	TOTAL		ACTIVE		OVER-5		NEVER	
	data	%	data	%	data	%	data	%
less than one-half acre	139	20	93	18	24	21	22	29
one-half to one acre	181	26	126	24	33	29	22	29
one to five acres	198	28	157	31	25	22	16	21
over five acres	170	25	124	24	30	27	16	21
no answer	3	1	2	1	1	1	0	0

3. The above area is what percent of the following?

% area	lawn		garden		woods		fields and water	
	data	%	data	%	data	%	data	%
0 - 9	106	15	266	38	75	11	36	5
10 - 19	45	7	109	15	50	7	29	4
20 - 29	87	12	107	15	67	9	28	4
30 - 39	38	5	40	6	32	5	18	3
40 - 49	113	16	41	6	42	7	36	5
50 - 59	46	7	4	1	13	2	19	3
60 - 69	40	6			14	2	20	3
70 - 79	98	15	5	1	10	2	38	5
80 - 89	89	12	2	1	11	2	17	3
no answer	29	4	117	17	376	52	450	65

4. Who is employed?

	TOTAL		ACTIVE		OVER-5		NEVER	
	data	%	data	%	data	%	data	%
self	90	13	73	14	5	4	12	16
spouse	352	51	248	48	69	61	35	46
both	97	14	63	12	16	14	18	24
neither	111	16	80	16	20	18	11	14
no answer	41	6	38	10	3	3	0	0

5. How many children of the following age groups are living at home?

	TOTAL		ACTIVE		OVER-5		NEVER	
	data	%	data	%	data	%	data	%
under 10 years	126	18	92	18	15	12	19	27
10 to 14 years	147	21	107	21	23	20	17	23
15 to 19 years	161	24	129	24	16	14	16	22
20 years and over	96	15	66	12	16	14	14	19
no answer	161	24	112	23	43	40	6	9

6. What percent of the horticultural work is done by each?

% of work	wife		husband		children		hired help	
	data	%	data	%	data	%	data	%
0 - 9	66	10	128	18	493	72	409	60
10 - 19	86	12	86	12	87	12	49	7
20 - 29	29	4	39	7	30	4	36	5
30 - 39	94	14	77	11	27	4	35	5
40 - 49	49	7	38	5	4	1	11	2
50 - 59	155	23	142	22	12	2	43	6
60 - 69	20	3	25	3	1		9	1
70 - 79	22	3	24	3	1		7	1
80 - 89	62	9	36	5	1		28	4
90 and over	74	10	63	9	1		31	4
no answer	34	5	33	5	34	5	34	5

7. Do you have any regular, professional help to maintain the grounds?

yes 157 (23%) no 526 (76%) no answer 2 (1%)

8. On the average, how many hours per week are spent working on the grounds during the growing season?

no. of hours	TOTAL data	%	ACTIVE data	%	OVER-5 data	%	NEVER data	%
0 - 9	211	30	142	28	38	33	31	40
10 - 19	216	30	175	35	35	31	6	9
20 - 29	99	15	78	14	14	13	7	10
30 - 39	33	5	31	6	1	1	1	1
40 - 49	25	3	19	4	6	5		
50 - 59	5	1	4	1	1	1		
60 - 69	4	1	4	1				
70 - 79	1	1	1	1				
80 - 89	4	1	3	1	1	1		
90 and over	8	1	6	1	2	2		
no answer	85	12	38	8	16	13	31	40

9. How many times do you entertain outdoors during the year?

	data	%
less than six	274	40
six to twelve	233	36
more than twelve	147	23
no answer	6	1

10. I live _____ miles from Longwood Gardens.

miles	TOTAL data	%	ACTIVE data	%	OVER-5 data	%	NEVER data	%
0 - 9	224	32	163	33	33	29	28	38
10 - 19	238	33	184	37	41	36	13	18
20 - 29	111	16	190	38	17	15	4	6
30 - 39	47	7	41	8	5	5	1	1
40 - 49	28	4	21	4	6	5	1	1
50 - 59	3	1	2	1	1	1		
60 - 69	4	1	3	1	1	1		
70 - 79	2	1	2	1				
80 - 89	3	1	1	1			2	1
90 and over	2	1	2	1				
no answer	39	6	3	1	9	6	27	38

11. What is your highest completed year of formal education?
Note: See footnote number 9.

education	TOTAL data	%	ACTIVE data	%	OVER-5 data	%	NEVER data	%
high school	106	15	76	15	15	13	15	20
one year college	55	8	41	8	8	7	6	8
two years college	85	12	62	12	12	11	11	14
three years college	29	4	23	4	4	4	2	3
associate degree	50	7	39	8	8	7	3	4
bachelor degree	256	36	179	36	46	41	31	41
masters degree	51	7	37	7	10	9	4	5
doctorate	21	3	17	3	3	3	1	1
registered nurse	9	1	5	1	3	3	1	1
other special training	6	1			4	4	2	3
no answer	23	3	23	5	0	0	0	0

12. Age:

age	TOTAL data	%	ACTIVE data	%	OVER-5 data	%	NEVER data	%
under 30	22	3	22	4	0	0	0	0
30 - 39	79	11	58	12	10	9	11	14
40 - 49	187	27	133	27	29	26	25	33
50 and over	389	56	282	56	72	64	35	46
no answer	14	3	7	1	2	1	5	7

13. I have applied _____ times for short courses and have been accepted _____ times.

no. of times	APPLIED data	%	ACCEPTED data	%
0	8	1	17	2
1	170	24	209	30
2	117	17	140	21
3	108	16	91	13
4	64	10	58	8
5	54	8	32	5
6	36	5	27	4
7	9	1	5	1
8	19	3	11	1
9 or more	50	6	40	6
no answer	56	8	61	9

14. I have been turned down for the following courses:
NOTE: Frequency is given in parentheses for each course.

Cacti and Succulents (1)
Christmas Decorations (25)
Dried Flower Arranging (1)
Ferns (8)
Flower Arranging (31)
Greenhouse Workshop (2)
Herbs (7)
Landscape Appreciation (22)
Plant Ecology (1)
Plant Materials (5)
Plant Photography (1)
Plants for the Home (1)
Pools and Water Lilies (1)
Preparation of Herbarium Specimens (1)
Propagation (3)
Pruning (12)
Rhododendrons (1)
Rock Gardening (2)
Spring Gardening (2)
Spring Wildflowers (46)
Terrariums (6)
Woody Plant Material (2)

15. I would generally prefer courses to be given in the:

morning 444 (64%) ; afternoon 108 (16%) ; evening 88 (13%)

16. I would like to see future courses that are either in the general area of or with the specific title of _____.
NOTE: The following is arranged in order of decreasing frequency which is given in parentheses. Subjects marked with an asterisk were covered in a course during 1964-68.

*Landscape Planning (67)
*Flower Arranging (40)
*Greenhouse Management (31)
Trees and Shrubs (28)
*Propagation (27)
*General Horticulture (21)
*Indoor Gardening (20)
*Vegetables (20)
*Wildflowers (18)
Gardening on a "city" lot (17)
*Pruning (16)
*Bonsai (16)
Pests and Diseases (16)
*General Botany (15)
*Ferns and Mosses (14)
*Rock Gardening (12)
Low Maintenance Plant Materials (12)
Lawn Care (12)
*Plant Identification (12)
*Ecology (12)
*Garden Management (11)
Perennials (10)
Plant Cultures (10)
Drying Flowers (8)
*Plant Materials (7)
Roses (7)
*Herbs (7)
*Soils (6)
Container Plantings (6)
*Terrariums (6)
*Broad-leaved Evergreens (6)
Native Plant Material (6)
*Plant Photography (4)
*Christmas Decorations (4)
Japanese Flower Arranging (4)
Plant Fertilization (4)
Dwarf Plants (4)
Orchids (4)
Attracting Birds (4)

16. Continued.

*Herbaceous Borders (4)
*Advanced Plant Material (3)
Native Trees (3)
Bulbrous Plant Material (3)
Mushrooms (3)
Ground Covers (3)
Espalier and Topiary (3)
Alpines (2)
Lilies (2)
Herbicides (2)
Water Gardens (2)
Organic Gardening (2)
Orchards (2)
*Rhododendrons (2)
Outdoor Lighting (2)
Japanese Gardening (2)

16 other subjects received one notation.

17. To which horticultural organizations do you belong?
NOTE: Answers are grouped as National, State, and Local with frequency given in parentheses.

National

American Horticulture Society (28)
Brooklyn Botanic Garden (9)
American Rock Garden Society (8)
American Orchid Society (7)
Garden Club of America (7)
American Bonsai Society (6)
American Chrysanthemum Society (6)
American Daffodil Society (6)
American Garden Society (6)
Herb Society of America (6)
American Begonia Society (2)
American Primrose (2)
National Association of Gardeners (2)
African Violet Society of America (1)
Boxwood Society of America (1)
Holly Society of America (1)

Seven other national and international organizations were mentioned.

17. Continued.

State

Pennsylvania Horticultural Society (162)
Delaware Federation of Garden Clubs (10)
Pennsylvania Bonsai Society (7)
Mid-Atlantic Lily Society (5)
Delaware Orchid Society (4)
Diamond State Garden Club (3)
Delaware Chrysanthemum Society (2)
New Jersey Horticultural Society (1)
Pennsylvania Nurseryman's Association (1)

Local — Only the 16 most frequently mentioned groups are listed below.

Garden Club of Wilmington (17)
Spade and Trowel Garden Club (13)
Barnes Arboretum Alumni (13)
Seedlings of Kennett Square (10)
Hill and Hollow Garden Club (8)
Morris Arboretum (8)
Valley Garden Club (8)
Timberlane Garden Club (6)
Bala Cynwyd Garden Club (5)
Town and Country Garden Club (5)
Canterbury Garden Club (4)
Four Seasons Garden Club (4)
Elverson Garden Club (4)
Gardeners of Newton Square (4)
Tyler Arboretum (4)
Wayne Garden Club (4)

There were 35 other local groups represented plus 99 people who did not specify of which group they were a member.

18. Have you ever failed to complete a short course?

	TOTAL		ACTIVE		OVER-5		NEVER	
	data	%	data	%	data	%	data	%
yes	133	18	91	18	19	15	23	32
no	558	80	426	85	89	81	43	53
no answer	15	2			5	4	10	15
If yes, for which of the following reasons.								
health	33	5	25	5	2	1	3	4
travel	59	8	43	8	9	8	4	5
business	15	2	9	2	3	2	3	4
lost interest in the course	26	4	14	3	5	4	1	2
no answer	0	0	0	0	0	0	12	17

19. If Longwood ceased awarding certificates for the completion of courses, do you believe that it would affect registration?

yes 46 (7%)
no 576 (83%)
no answer 69 (10%)

The results of the basic questionnaire will usually be considered under four headings: as the total of the 691 complete and acceptable returns, and three subdivisions; those 502 returns from people who have participated in a course between Spring, 1964 and Spring, 1968; those 113 returns from people who have not taken courses in the last five years, and those 76 returns from people who had never completed a course. Henceforth these classifications will be referred to as TOTAL, ACTIVE, OVER-5, and NEVER respectively.

The NEVER group is the "youngest" group, with less than 50 percent over 50 years of age, and members of this group consequently tend to have more and younger children at home. There is an average of 0.87 children per person in this group responding to the questionnaire. The participant tends to be employed more often in addition to the spouse. Individuals in this group also average 2.63 years of education or training beyond high school.[9] Although none of this group had successfully completed a course according to the records of Longwood Gardens, only one-third noted this failure on their questionnaire.

In comparison the OVER-5 group is the "oldest" group with 64 percent over 50 years of age and with fewer and older children. There is an average of 0.62 children per participant. Very few participants are employed and more often neither husband nor wife is employed than in the NEVER group. This group had an average

education or training equal to the ACTIVE group with 3.00 years beyond high school. About four percent had failed to complete a short course due to loss of interest but twice as many gave travel as their reason for failing.

The ACTIVE group contains the only participants under 30 years of age. Though they only comprise four percent, as opposed to the 56 percent over 50, it is important to note that those under 30 are totally accounted for in the ACTIVE group. Children tend towards the 15 to 19 year old age bracket and are almost as frequent as in the NEVER group with an average of 0.78 children per participant. Employment is also comparable to the NEVER group except that percentage-wise there are one-half as many instances of both husband and wife being employed. The average level of formal education or training beyond high school is 3.03 years which is almost equal to the 3.00 of the OVER-5 group. Course failure is also comparable to the OVER-5 group though there was slightly more illness reported as reason for failure.

The age distribution of the TOTAL group is about what would be expected. Few are younger than 30 and slightly less than 50 percent are under 50. The number of children seems to be fairly evenly distributed over the four age groups. In one-half of the replies, it was indicated that only the spouse works

while the other one-half of the replies were evenly distributed over self, both, and neither being employed. The education level averages 2.87 years beyond high school. The response of the participants to the question "Have you ever failed to complete a short course?" closely resembles the response of the OVER-5 group.

The Longwood Gardens education courses draw 80 percent of their participants from within a 30 mile radius which encompasses Chester County and western Philadelphia in Pennsylvania, and New Castle County, Delaware. Over 98 percent of all the people live in houses while the remaining 2 percent live in apartments. The OVER-5 group tends to have more land surrounding their homes. Lawns generally comprise 40 percent or more of the land and 31 percent of the participants have gardens which cover 10 - 30 percent of their area. Less than 45 percent of the total consider that they have a wooded area, while 35 percent hace open fields or ponds on their property.

The pattern of horticultural work compares closely with what might be expected. The OVER-5 group's average estimate of the time spent on their grounds is about 15 hours per week during the growing season. It is impossible to determine this point for the NEVER group in that 43 percent of the people did not respond to this question. Wives generally do as much or more of the outside

labor as the husbands. Less than 25 percent of the children living at home do any of the work. About 35 percent noted varying amounts of hired help being used on their grounds, yet only 23 percent indicated they had regular professional help. The reliability of the 23 percent who indicated they had regular, professional help may be open to question in that many questioned whether "regular, professional" help applied to grass cutters and neighborhood "odd-job" boys.

In breaking the total population into groups according to the number of courses taken, 37 percent had taken one course, 16 percent had taken two, 7 percent had taken three, 5 percent had taken four, and 7 percent had taken more than five courses in the past five years. There were insufficient numbers to include those people who had participated in only five courses. Those people who have taken only one and two courses tend to be somewhat younger than those who have taken three or more courses. It is also interesting to note that 48 percent of the group taking one course and 44 percent of the group taking two courses spent less than ten hours per week on horticultural endeavors while only 28 percent of the ACTIVE population spent less than ten hours.

Surprisingly the group which had taken four courses tended to be the oldest with 74 percent being over 50 while the group having taken more than five courses had 60 percent over 50

(TOTAL average was 16 percent) and also had one-half to one-third the average number of children under 20 years of age living at home. The group having taken four courses also contained the lowest percentage of those reported to have failed to complete a course due to loss of interest (9 percent rather than the 20 percent TOTAL average).

The goodness of fit and statistical significance of the data was derived by the chi-square test. This formula is $\sum \frac{(o - e)^2}{e}$, where "o" is the observed value and "e" is the expected value. There is a very significant relationship between the level of educational attainment of the participant and the number of courses he pursues. The chi-square value was 136.296, which is significant at the .001 level with 48 degrees of freedom. Data for this relationship may be found in Table 3. There was no significance though between an individual's educational attainment and his failure to complete a course.

The significance was also very high for the relationship of age to the number of courses taken. The chi-square value was 40.011 while the critical value for significance at .001 level is 38.93 at 21 degrees of freedom. There was no significance of age in relationship to the failure to complete a course. Table 4 gives the summary for the comparison of age to the number of courses taken.

TABLE 3

EDUCATION VS. NUMBER OF COURSES TAKEN

level of education	number of courses taken								
	0	1	2	3	4	5	6	7	total
high school or less	20	38	13	6	5			9	91
one year of college	13	11	12	13	4			6	49
two years of college	14	36	6	10	2	1	2	3	74
three years of college	9	12	4	1				1	27
associate degree	13	18	6	4	2			4	47
bachelor degree	35	85	41	35	13	2	2	12	235
masters degree	15	12	8	4	5			3	47
doctorate	6	6	1	3	1	1		2	20
registered nurse		3	4				1	1	9
no answer	0	13	5	0	2	0	0	0	20

TABLE 4

AGE VS. NUMBER OF COURSES TAKEN

age	0	1	2	3	4	5	6	7
under 30		12	5	2	1	2		
30 - 39	10	33	16	3	2			4
40 - 49	29	71	24	14	5	1	2	15
50 and over	72	133	63	27	26	5	1	27

The distance that the participant lives from Longwood Gardens is very significant. The chi-square value of 31.866 is well above the critical value at the .001 level at 36 degrees of freedom. As stated earlier, 84 percent of the participants commute less than 30 miles and two-thirds travel less than 20 miles. Data concerning this subject may be found in Table 5.

TABLE 5

NUMBER OF COURSES VS. MILES FROM LONGWOOD GARDENS

Number of courses taken	9 or less	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90 or more
1	78	84	50	23	9	4	3	0	1	1
2	41	30	22	10	6	1				1
3	15	18	6	5	1	1			1	
4	9	16	5		3			1		
5 or more	16	20	6	3	2	0	0	0	0	0

About two-thirds of the total participants returning questionnaires had affiliation with either a local, state, or national horticultural organization. The American Horticulture Society was the most popular national organization with 28 members. Following the A.H.S. was the Brooklyn Botanic Garden with nine members, the American Rock Garden Society with eight members, the American Orchid Society and the Garden Club of America each with seven members. There was a total of 105 people belonging to 23 national and international groups.

At least 52 local horticulture groups are represented by 180 participants, nearly 40 percent of the total group surveyed. There were also 99 people who belonged to local groups but did not specify which one. Most frequently represented was the Garden Club of Wilmington with 17 members, followed by the Spade and Trowel, Valley, and Seedlings Garden Clubs with 13, 13, and 10 members respectively.

The Longwood Gardens Education Office has no direct or indirect relationship with, or advertisement through, any local, state, or national group for the purpose of promoting its short course program.

THE COURSES

In the following section the course offerings will be reviewed considering size of enrollment, size of returns, effects of awarding certificates, and areas of study suggested. An overall summary will examine the scope of offerings by general subject groupings as: scientific, applied, general and specific plant material, and crafts.

Reference will be made to two rating schemes. The first rates a course as poor, fair, good, or excellent. This will be in regard to the question asked of participants to apply these classifications to several areas involved with instruction and overall effectiveness. The second scheme is the participant's impression of the course as a whole. The possible ratings are: too elementary, simple, about right, difficult, and much too difficult.

The four most popular courses according to enrollment offered by Longwood Gardens are Christmas Decorations, Plant Material, Advanced Flower Arranging, and Spring Wildflowers. The first is offered every fall as a one-day workshop for about 40 people. The instructor was changed in the Fall of 1966 therefore creating two evaluative situations. Participants have said

this course was "...inspiring", "...wonderful", and a few noted it as "...dull", and solely"...for wreath making".

Plant Material (Spring, 1966, 1967, and 1968) has been rated relatively high by the 131 who have taken it. Basically it is a course to identify and familiarize students with a range of outdoor plants. Most who enroll are interested from the point of view of landscaping their properties.

Advanced Flower Arranging (Spring, 1964 and 1965; Fall, 1966 and 1967) has been taken by over 100 people. It has been taught by the same instructor. Remarks were favorable though a few rated the course "simple". A number of women have repeated this course periodically.

On the other hand, Spring Wildflowers is offered every spring to about 30 people as six weekly meetings including several field trips. This course has been taught every year by the same instructor. Remarks have ranged from "...excellent", "...more field trips" to "...too brief for material covered", and "...too large a scope".

It should also be noted that 25 people requesting Christmas Decorations, and 46 people requesting Spring Wildflowers remarked that their registration had been turned down in the 1964 - 1968 period. These are the highest numbers for any of the courses offered.

Propagation (Spring, 1965 and 1966) and Bulb Forcing (Fall, 1965 and 1966) are courses in which one-half the time is spent applying information from the lecture. Both have had about 100 students. The tendency was to rate the courses as "simple" and note that their thinking was rather unstimulated. Though the subject of propagation is one of the ten most popular course suggestions according to question number 16, the coverage of this course does not seem to be ample.

The previously mentioned courses were chosen for their large enrollments, but returns were rather low. Percentage returns were: Christmas Decorations, 45 percent; Spring Wildflowers, 49 percent; Propagation, 40 percent; and Bulb Forcing, 44 percent; while the average of all classes was 53.3 percent. There was no decrease in the percent returns from recent offerings to earlier offerings except in the case of Advanced Flower Arranging in which the returns of the 1966-67 course were 70 percent while the returns of the 1964-65 session were only 36 percent. In each course there were 10-12 percent who failed to receive credit due to poor attendance for reasons of travel, business, health, or loss of interest.

Very small classes may be found when subjects become more specialized, as Beginning Bonsai and Advanced Bonsai (Spring, 1967), Terrariums (Fall, 1966), and Herbs (Fall, 1965). The Bonsai courses were each limited to 12 participants and were given by a nationally

recognized authority in conjunction with Lecture and Demonstration of Bonsai which had an open enrollment. In the two former Bonsai courses the instructor was able to work closely with each student. Each course received "excellent" ratings and only favorable comments.

Enrollment in Terrariums and Herbs was 17 and 19 respectively. Ratings were "good" to "excellent". Remarks tended toward lenghtening the courses from two and four meetings, indicating a higher level of interest and desire to carry the subject further. Returns were high, 82 percent and 89 percent, while the "dropouts" were limited to four from Herbs.

The highest returns for individual classes were the previously mentioned Herbs (89 percent) and Terrariums (82 percent), along with Beginning Flower Arranging (70 percent) and Fundamentals of Gardening (70 percent).

Though the returns were high for Beginning Flower Arranging (Spring, 1966 and Fall, 1967), the marking was relatively low. It was rated "poor" in a number of areas, especially those involving the instructor. Some rated the course "simple" while twice as many rated it "difficult" with remarks to the effect that the instructor was too advanced or just a poor teacher.

In Fundamentals of Gardening (Spring, 1968) ratings went down where instruction was involved. This was basically due to a small percentage, part of whom felt it was too simple and part of whom felt it was too difficult.

The classes in which returns were too few to make an evaluation were: Vegetables and Small Fruits, 6 out of 22, or 27 percent (Spring, 1964); Early Herbaceous Plant Material, 6 out of 27, or 22 percent (Spring, 1964); Soils and Their Properties, 7 out of 33, or 21 percent (Spring, 1964); Plant Kingdom, 6 out of 33, or 18 percent (Spring, 1966); and Plant Ecology, 2 out of 21, or 10 percent (Spring, 1968).

In this study the participant was asked to evaluate the last five classes he had taken. Due to this method classes offered in 1964 and 1965 were often disregarded when five or more classes had since been taken. The average percent returns for all classes each year was: 1964, 37 percent; 1965, 50 percent; 1966, 49 percent; 1967, 53 percent; and Spring, 1968, 37 percent. A discussion of these returns will be found later in the conclusions.

In the Fall of 1966 the practice of awarding certificates for the successful completion of the more difficult and time-consumimg courses was initiated. Question number 19 of the

basic questionnaire asked if the discontinuance of this practice would affect registration, only seven percent said it would. A few said that it would not affect their registration but that in "...talking to others..." concluded that it would affect other people's registering.

In comparing the courses in which certificates were awarded with those given only in 1964 - 65 and "all other" courses, only the average number of people turned down per course was noticeably different. An average of seven people per course are turned down for registration in courses offering certificates as opposed to one per course of the 1964 - 65 group and three per course of "all others" which were 10 percent and 11 percent respectively.

One of the more important factors to be considered is the course or courses that people remember having been refused enrollment. Though it is not always feasible to create classes with unlimited enrollment, the people who want to enroll but cannot be admitted should be considered. This study was only involved with people who had registered at least once according to the files of Longwood Gardens. There were 180 incidences out of 691 people who remember being turned down for a total of 21 courses. Many people noted that they had been turned down more than once but often could not remember the course or courses.

The five principle courses involved, in order of frequency of occurence were: Spring Wildflowers, Advanced Flower Arranging, Christmas Decorations, Landscape Appreciation, and Pruning.

The Longwood Gardens education program is only designed to accommodate 250 to 300 people each "semester", whether spring or fall. Registration for some courses closes within days, many others close within one week. This is often an irritating point with many people. Those who live in New Jersey charge that Delaware residents are mailed registration forms first and vice versa. Even people in near-by towns are upset because they "...often receive their forms after everyone else". Actually all mailing is done at the same time, usually on a Friday to allow for handling over the week-end.

This questionnaire also asked what subjects each participant would like to see offered. In Table 2, question 16, page 18, are the most frequently mentioned subjects and the number of times each was mentioned. Those with an asterisk (*) were covered by a short course at some time in the 1964 - 68 period. It should be noted that 15 of the first 20 subjects were covered in a short course during the period between Spring, 1964, and Spring, 1968. There was a total of 605 suggestions covering 64 subjects.

On the following pages are tables condensed from the individual course questionnaires, and grouped as to the general area of subject matter as: scientific, applied, general and specific plant material, and crafts. Percentages in the following tables may not equal 100 due to rounding to the nearest percentage, or the exclusion of people who failed to answer that question.

Courses marked with an asterisk (*) are courses in which certificates are awarded upon successful completion.

The scientifically oriented courses (Table 6a., page 38) are aimed at the serious amateur who wishes to cover the theory and technical aspects of horticulture. Except for Soils and Their Properties, the returns showed that the enrollment was comprised mainly of participants who had taken three or more previous courses. The ratings of Plant Ecology cannot be measured properly in that only two evaluations were received, for this reason all statistics will be enclosed in parentheses.

The dropout rate was moderate to high with an average of 16 percent. Plant Ecology had the highest dropout rate of any course. Much of this was due to the concentrated study presented by a new instructor. It is not known whether there is any direct relation of this aspect to the very low rate of return which is also the lowest of any class. This same instructor taught Plant

TABLE 6a.

SCIENTIFIC COURSES - GENERAL INFORMATION

	season(s) offered	total enrollment	% dropout a.	number noting refused enrollment	number returned	number mailed	% returns b.
1. Basic Botany.....	F'64	53	9	0	20	23	38
2. Botanical Terminology.....	S'64	35	20		14	17	40
3.*Families of Ornamental Plants.....	S'65/67	50	22		25	29	50
4.*Plant Ecology.....	S'68	21	38	1	2	5	(10)
5.*Plant Kingdom.....	S'66	33	9		6	7	18
6.*Plant Physiology.....	F'67	20	10		8	8	40
7. Soils and Their Properties.	S'64	33	3	0	7	12	21

a. percentage that dropped course before completion
b. percentage return of total enrollment for course

Physiology which did not receive the same ratings.

Table 6b. (page 40) covers the basic areas involved with instruction. Each area is an important facet to be considered for the most efficient and effective learning process. Subject coverage was generally rated "excellent" except for Plant Physiology and to a lesser degree Families of Ornamental Plants. The ratings of stimulation of thinking, material covered, the instructor-student relations and overall effectiveness were "good" with more "fair" ratings appearing. Again Plant Physiology suffered with very frequent "poor" ratings in all areas.

Familiarity with the subject matter is extremely low in scientific matters (Table 6c., page 42). Only in Soils and Their Properties did the major number of participants feel they knew a moderate amount about the subject material. The group was split in half on rating their knowledge of Families of Ornamental Plants between "little" and "moderate". There is a significant relationship between the respondent's familiarity with the subject and his rating of the course "about right" or "difficult" while a lesser relationship is shown with "covering the course as expected" and "finding the information useful". Familiarity with the subject and the rating of the courses as "simple", "difficult", et cetera, is very significantly related at the .001 level with six degrees of freedom. These data appear in Table 7, page 44.

TABLE 6b.

SCIENTIFIC COURSES - INSTRUCTION

	How well was the subject covered?					How well was your thinking stimulated?					How well was the material presented?				
	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer
1. Basic Botany.....	0	0	20	70	10	0	1	30	55	14	0	0	25	65	10
2. Botanical Terminology.....			36	57	7		7	50	36	7			43	43	14
3.*Families of Ornamental Plants.....		4	12	84			8	12	80			4	16	80	
4.*Plant Ecology.....			(100)						(100)					(100)	
5.*Plant Kingdom.....			50	50				67	33				50	50	
6.*Plant Physiology.....		50		38	12	37	25	13	25		13	38		38	11
7. Soils and Their Properties	0	0	43	57	0	0	14	57	29	0	0	0	43	57	0

TABLE 6b. - Continued

	How well did the instructor work with the students?					How would you rate the overall effectiveness?				
	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer
1. Basic Botany.....	0	0	35	55	10	0	5	24	60	11
2. Botanical Terminology.....			43	43	14		14	43	29	13
3.*Families of Ornamental Plants.....		4	16	76	4		4	20	72	4
4.*Plant Ecology.....				(100)				(50)	(50)	
5.*Plant Kingdom.....		17	50	33			17	50	17	16
6.*Plant Physiology.....	13	38	13	25	11	25	38		25	12
7. Soils and Their Properties	0	14	14	57	15	0	0	57	43	0

TABLE 6c.

SCIENTIFIC COURSES - PERSONAL - COURSE VALUES

	How familiar were you with subject?				Reason for taking course.				Was the course					
	% little	% moderate	% above average	% no answer	% general knowledge	% hobby	% profession	% no answer	% elementary	% simple	% about right	% difficult	% much too difficult	% no answer
1. Basic Botany.....	60	35	4	1	75	20	0	5	0	0	65	30	5	0
2. Botanical Terminology...	50	36	14		64	21	7	8	7		64	14	14	1
3.*Families of Ornamental Plants.....	48	48	4		60	40					48	48	4	
4.*Plant Ecology.....	(100)				(50)	(50)						(100)		
5.*Plant Kingdom.....	83	17			66	33		1			17	50	33	
6.*Plant Physiology.....	88	12			75	25					13	25	25	37
7. Soils and Their Properties	39	71	0	0	57	29	14	0	0	0	100	0	0	0

TABLE 6c. - Continued

	Did the course cover the subject as expected?			Have you found the new information practical and useful?		
	% yes	% no	% no answer	% yes	% no	% no answer
1. Basic Botany.....	75	3	22	80	5	15
2. Botanical Terminology.....	79		21	93	7	
3.*Families of Ornamental Plants.....	84	16		96	4	
4.*Plant Ecology.....	(100)			(100)		
5.*Plant Kingdom.....	83		17	67		33
6.*Plant Physiology.....	25	63	12	25	38	37
7. Soils and Their Properties.	100	0	0	86	0	14

TABLE 7.

FAMILIARITY VS. RATINGS OF OVERALL COURSE EFFECTIVENESS

familiarity of subject	ratings of course				
	too elementary	simple	about right	difficult	much too difficult
little	3	10	324	46	9
moderate	12	29	374	15	3
above average	17	12	95	3	0

The relationship of familiarity to the general rating of a course is equally significant and is shown in Table 8.

TABLE 8.

FAMILIARITY VS. RATINGS OF INSTRUCTION

familiarity of subject	rating of instruction			
	poor	fair	good	excellent
little	23	129	656	1130
moderate	27	158	668	1352
above average	15	93	176	345

With the exception of Soils and Their Properties, these courses are usually rated as "difficult". Much of this is due to the subject material and the participants' admitted lack of familiarity with the subjects.

There is nearly a three to one ratio of participants taking these courses for general knowledge rather than for their hobby. Only one person took any of these for professional reasons (Soils and Their Properties and Botanical Terminology).

Serious problems seem to be involved in the cases of Plant Kingdom and Plant Physiology. Participants were almost entirely unfamiliar with the subjects and rated the courses "difficult" and "much too difficult". Strangely they said Plant Kingdom covered the subject as expected and the material was presented well. The trouble seems to lie in the instructor-student relations in that both of these courses were graded down on "instructor working with students" and the "stimulation of thinking".

The courses termed as Applied contain courses dealing with fundamentals of horticulture, the application of principles and cultural methods. Some courses consist of lectures as with Fundamentals of Gardening, but more relied heavily on demonstrations and actual participation as with Bulb Forcing and Propagation.

Table 9a. (page 46) contains the general data for the following discussion. The rate of returns was very good with no less than 33 percent for any course. In this group are a number

TABLE 9a.

APPLIED COURSES - GENERAL INFORMATION

	season(s) offered	total enrollment	% dropout	number noting refused enrollment	number mailed	number returned	% returns
General							
8. Fall Gardening.....	F'67	68	9	0	47	41	60
9. Fundamentals of Gardening..	S'68	40	15		31	28	70
10. Greenhouse Workshop.....	S'64	25		2	22	16	64
11. Greenhouse Workshop.....	S'65	46	4		20	15	33
12.*Landscape Appreciation.....	F'64/66/67	112	12	22	32	20	40
13. Spring Gardening.....	S'64	86	12	2	35	28	33
14.*Spring Gardening.....	S'67	54	19		32	26	48
Specific							
15. Bonsai-Beginning.....	S'67	53	9		8	7	38
16. Bonsai-Advanced.....	S'67	12			10	8	66
17. Bonsai-Lecture and Demonstration.....	S'67	50	10		21	18	36
18.*Bulb Forcing.....	F'65/66	80	10		47	35	44
19. Pools and Water Lilies.....	F'65	24	13	1	12	9	38
20.*Propagation.....	S'65/66	99	10	3	50	39	40
21. Pruning.....	S'68	61	8	12	28	22	36
22.*Rock Gardening.....	S'67	47	6	2	35	31	66
23. Terrariums.....	F'66	17	0	6	16	14	82

of courses in which people noted having been refused enrollment. From the point of view of refused enrollments for each time the course was offered, registration for Pruning has refused 12 people each year it was offered. An average of seven people are turned down each year Landscape Appreciation has been offered.

There were several courses that received low ratings as shown in Table 9b., page 48, but there were four that drew noticeably lower ratings than the average and numerous criticisms. In Pools and Water Lilies low ratings were involved with how well the subject was covered and the instructor - student relations but thought stimulation was often ranked "fair" to "good". Spring Gardening of both 1964 and 1967 were graded similarly and drew additional criticism on presentation especially the 1967 course. Very low ratings were given to Pruning in all categories. This course was taught by a new instructor not conditioned to classroom teaching.

It should also be noted that in six of these courses it was the first or second course for a majority of the participants. These courses were: Bulb Forcing, Spring and Fall Gardening, Fundamentals of Gardening, Landscape appreciation, and Propagation. Terrariums on the other hand was composed principly of those who had taken several courses previously.

TABLE 9b.

APPLIED COURSES - INSTRUCTION

	How well was the subject covered?					How well was your thinking stimulated?					How well was the material presented?				
General	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer
8. Fall Gardening.....	0	7	34	54	5	0	15	17	63	0	0	5	24	66	5
9. Fundamentals of Gardening.			32	64	4		11	21	64	4		7	18	75	
10. Greenhouse workshop.....		6	13	75	6			19	75	6		6	13	75	6
11. Greenhouse Workshop.....		7	40	53				40	60				33	67	
12.*Landscape Appreciation....		8	23	68	1	1	6	12	76	5	1	3	17	75	4
13. Spring Gardening.....		7	32	57	4		14	39	43	4		11	39	46	4
14.*Spring Gardening.....		12	30	58		8	12	30	50		4	12	23	62	4
Specific															
15. Bonsai - Beginning.....			14	86				14	86					100	
16. Bonsai - Advanced.....				100					100					100	
17. Bonsai - Lecture and Demonstration....		5	33	61	1	5		44	39	2		5	22	61	12
18.*Bulb Forcing.....		6	34	60			14	37	46	3		3	28	68	
19. Pools and Water Lilies....		11	11	78			22	11	67				22	67	1
20.*Propagation.....		3	41	54	2		15	44	38	3		8	46	44	2
21. Pruning.....		36	32	27	5	5	27	36	27	5		32	36	27	5
22.*Rock Gardening.....		6	29	65		6	6	19	68	1		13	23	61	3
23. Terrariums.....	0	7	29	64	0	0	0	43	57	0	0	0	36	64	0

TABLE 9b. - Continued

	How well did the instructor work with the students?					How would you rate the overall effectiveness?				
	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer
General										
8. Fall Gardening.....	0	7	29	56	7	2	2	39	49	8
9. Fundamentals of Gardening.		4	18	75	3		11	18	69	2
10. Greenhouse Workshop.....		6	13	75	6			19	75	6
11. Greenhouse Workshop.....			27	73				27	60	13
12.*Landscape Appreciation....			20	77	3	1	3	20	68	8
13. Spring Gardening.....	4	11	39	39	7		4	43	46	7
14.*Spring Gardening.....	8	8	30	54			19	27	54	
Specific										
15. Bonsai - Beginning.....			14	86					86	14
16. Bonsai - Advanced.....				100					100	
17. Bonsai - Lecture and Demonstration....		5	28	33	34		5	33	44	18
18.*Bulb Forcing.....		6	23	71			9	31	54	6
19. Pools and Water Lilies....		11	11	67	12		11		78	11
20.*Propagation.....		10	36	51	3		13	46	38	3
21. Pruning.....		9	45	32	14		45	23	27	5
22.*Rock Gardening.....		10	26	55	9		10	35	55	
23. Terrariums.....	0	0	29	71	0	0	0	43	57	0

Professional interests appear strongly represented in six of these courses as seen in Table 9c., page 51. These are principly small, private nurserymen. Three courses, Bulb Forcing, Pruning, and Spring Gardening, 1967, received a large number of "simple" ratings; the latter two received "simple" and "elementary" ratings by over one-third of the participants.

At least seven courses were presented in a way the people did not expect. This applied to Fundamentals of Gardening, Pruning, and both Spring Gardening courses. In Lecture and Demomstration of Bonsai, and Pools and Water Lilies the same numbers who expected different coverage also noted that they did not find the information practical or useful. None of the people wrote any criticism or suggestions as to why they felt this way.

TABLE 9c.

APPLIED COURSES - PERSONAL - COURSE VALUES

	How familiar were you with the subject?				Reason for taking course.				Was the course					
General	% little	% moderate	% above average	% no answer	% general knowledge	% hobby	% profession	% no answer	% elementary	% simple	% about right	% difficult	% much too difficult	% no answer
8. Fall Gardening.....	37	41	22	0	71	27	0	2	7	5	83	2	0	3
9. Fundamentals of Gardening.	43	57			60	36	4			7	82	11		
10. Greenhouse Workshop.....	25	56	19		50	50				6	88			6
11. Greenhouse Workshop.....	33	67			27	66	7				93			7
12.*Landscape Appreciation....	41	48	8	3	55	45			5	5	80	3		7
13. Spring Gardening.....	36	50	14		75	21	4		7		82	4		7
14.*Spring Gardening.....	4	73	23		69	31			8	19	69			4
Specific														
15. Bonsai - Beginning.....	86	14			43	57					100			
16. Bonsai - Advanced.....	13	50	37			88	12				88			12
17. Bonsai - Lecture and Demonstration....	50	28	17	5	56	44					94			6
18.*Bulb Forcing.....	46	46	8		49	46	3	2	3	14	71	3		9
19. Pools and Water Lilies....	100				56	33		11		11	67		11	11
20.*Propagation.....	31	51	18		38	59	3		3	7	90			
21. Pruning.....	41	50	9		68	32			5	27	55	5		8
22.*Rock Gardening.....	52	42	6		74	26					97	3		
23. Terrariums.....	71	29	0	0	43	57	0	0	0	7	86	0	0	7

TABLE 9c. - Continued

	Did the course cover the subject as expected?			Have you found the new information practical and useful?		
	% yes	% no	% no answer	% yes	% no	% no answer
General						
8. Fall Gardening.....	85	7	8	88	2	10
9. Fundamentals of Gardening.	75	14	11	89	4	7
10. Greenhouse Workshop.....	81	6	13	81	6	13
11. Greenhouse Workshop.....	93	7		100		
12.*Landscape Appreciation....	85	12	3	95	4	1
13. Spring Gardening.....	82	11	7	89	7	4
14.*Spring Gardening.....	85	12	3	88	4	8
Specific						
15. Bonsai - Beginning.....	100			100		
16. Bonsai - Advanced.....	100			100		
17. Bonsai - Lecture and Demonstration....	72	11	17	72	11	17
18.*Bulb Forcing.....	91		9	86	9	5
19. Pools and Water Lilies....	67	22	11	67	22	11
20.*Propagation.....	87	10	3	100		
21. Pruning.....	64	23	13	77	9	4
22.*Rock Gardening.....	87	10	3	94	3	3
23. Terrariums.....	93	7	0	100	0	0

Plant Material courses, Table 10a., page 54, are an important facet of this program. The first six courses listed are of a more general nature while the next seven deal with specific groups of plants. The general group has a rather high average incidence of dropouts, 13 percent, which is exceeded only by the 16 percent of the scientific courses. The frequency of enrollment being refused is very low, less than two people per year per course offered, except for Spring Wildflowers in which 46 people have noted not being admitted. This is the highest of any course.

There are three courses in which most of those enrolled had not taken previous courses: Plants for the Home, Rhododendrons, and Spring Wildflowers. But Herbs and Terrariums are the only courses in which the enrollment is comprised of people having taken three or more courses previously.

Only three of the general plant material courses were graded low in any area: Plants for the Home, Spring Wildflowers, and Vegetables and Small Fruits (Table 10b., page 55). All of these were rated low in stimulation of thought while Plants for the Home and Spring Wildflowers were rated low in how well the subject was covered. In both of these instances it was mentioned earlier in the text that the students wanted these two courses lengthened in some way so as to cover more material

TABLE 10a.

PLANT MATERIAL COURSES - GENERAL INFORMATION

	season(s) offered	total enrollment	% dropout a.	number noting refused enrollment	number mailed	number returned	% returns b.
General							
24. Early Herbaceous Plant Material.....	S'64	27	15	0	7	6	22
25.*Plant Material.....	S'66/67/68	131	10	5	57	46	35
26.*Plants for the Home.....	F'67	52	6	1	36	31	60
27.*Spring Wildflowers.....	S'65/66/67/68	123	14	46	67	60	49
28. Vegetables and Small Fruit	S'64	22	18		7	6	27
29. Woody Plant Material.....	S'65	26	15	2	14	9	35
Specific							
30. Broad-leaved Evergreens..	F'65	33	6		14	10	30
31. Cacti and Succulents.....	F'64	22	5	1	14	13	58
32.*Ferns.....	F'66	30	7	8	22	18	60
33.*Hardy Chrysanthemums.....	S'66	40	10		23	21	52
34. Heaths and Heathers.....	S'67	55	5		36	32	58
35. Herbs.....	F'65	19	21	7	21	17	89
36.*Rhododendrons.....	S'66	29	3	1	19	15	50

a. percentage that dropped course before completion
b. percentage return of total enrollment for course

TABLE 10b.

PLANT MATERIAL COURSES - INSTRUCTION

	How well was the subject covered?					How well was your thinking stimulated?					How well was the material presented?				
	poor %	fair %	good %	excellent %	no answer %	poor %	fair %	good %	excellent %	no answer %	poor %	fair %	good %	excellent %	no answer %
General															
24. Early Herbaceous Plant Material.....	0	0	0	100	0	0	0	17	83	0	0	0	0	100	0
25.*Plant Material.....		2	22	70	6	2		28	65	5	2		15	78	5
26.*Plants for the Home.....	3	13	52	29	3	10	13	39	35	3	6	10	52	32	
27.*Spring Wildflowers.....	2	7	32	57	2	3	13	30	50	4		5	32	58	5
28. Vegetables and Small Fruit			50	50		16	17	17	50				50	50	
29. Woody Plant Material.....			11	89				11	89				11	89	
Specific															
30. Broad-leaved Evergreens..		10	20	70				10	90				20	80	
31. Cacti and Succulents.....		8	38	54		8		46	46			8	15	77	
32.*Ferns.....			50	50				33	67				39	61	
33.*Hardy Chrysanthemums.....		10	38	50	2		14	50	29	7		10	38	50	2
34. Heaths and Heathers.....		9	44	47			16	34	44	6		13	38	47	2
35. Herbs.....			41	59			6	35	59				35	65	
36.*Rhododendrons.....	0	13	33	53	1	0	27	47	27	9	0	0	40	60	0

TABLE 10b. - Continued

	How well did the instructor work with the students?					How would you rate the overall effectiveness?				
	% poor	% fair	% good	% excellent	% no answer	% poor	% fair	% good	% excellent	% no answer
General										
24. Early Herbaceous Plant Material.....	0	0	0	100	0	0	0	0	100	0
25.*Plant Material.....	2		17	71	10	2		14	73	11
26.*Plants for the Home.....		6	48	39	7	10	13	48	26	3
27.*Spring Wildflowers.....	2	5	30	60	3	2	12	28	52	6
28. Vegetables and Small Fruit			50	50		17	17		67	9
29. Woody Plant Material.....			22	78				11	78	11
Specific										
30. Broad - leaved Evergreens.			20	80				30	70	
31. Cacti and Succulents.....		23	31	46			8	46	38	8
32.*Ferns.....			33	67			11	28	61	
33.*Hardy Chrysanthemums.....			52	43	5		5	38	50	7
34. Heaths and Heathers.....		6	34	50	10		9	47	38	6
35. Herbs.....			29	71			12	35	53	
36.*Rhododendrons.....	0	7	20	67	6	0	13	47	33	7

more thoroughly. Plants for the Home and Vegetables and Small Fruits were rated low on overall effectiveness.

There were four courses on specific plant material that were marked down from "excellent". Cacti and Succulents was rated "fair" by 23 percent of the students in the area of instructor - student cooperation. Hardy Chrysanthemums, Heaths and Heathers, and Rhododendrons each received 14 percent to 27 percent of their evaluations as "fair" in the area of stimulating the participant's thinking. But in overall effectiveness each of the preceding four courses received a major portion of "good" ratings.

Again there is the relationship between familiarity with the subject and the degree of difficulty encountered by the student (Table 10c., page 58). When the student has an above - average knowledge, the courses become simpler as is the case with: Hardy Chrysanthemums, Plants for the Home, and Rhododendrons. The negative of this is true also, that the less knowledge, the harder the course seems, as with Ferns. But when questioned if the course covered the subject as they had expected, substantial numbers of "no's" were only shown with Plants for the Home, and Rhododendrons. Yet Herbs, and Vegetables and Small Fruits received a large porportion of "no's" yet were rated "about right". Only Plants for the Home and Vegetables and Small Fruits

TABLE 10c.

PLANT MATERIAL COURSES - PERSONAL - COURSE VALUES

	How familiar were you with subject?				Reason for taking course.				Was the course					
	% little	% moderate	% above average	% no answer	% general knowledge	% hobby	% profession	% no answer	% elementary	% simple	% about right	% difficult	% much too difficult	% no answer
General														
24. Early Herbaceous Plant Material.....	17	50	33	0	50	50	0	0	0	0	100	0	0	0
25.*Plant Material.....	42	43	10	5	59	38		3		2	81	12		5
26.*Plants for the Home.....	29	58	13		42	58			23	6	68			3
27.*Spring Wildflowers.....	25	50	25		57	38	2	3	5	3	83	8		1
28. Vegetables and Small Fruit	17	67	17		67	17		16			67			33
29. Woody Plant Material.....	22	78			67	22		11			89	11		
Specific														
30. Broad-leaved Evergreens...	30	60	10		70	30					100			
31. Cacti and Succulents.....	62	31	8		54	46					92			8
32.*Ferns.....	78	22			83	17				6	56	28	6	4
33.*Hardy Chrysanthemums.....	24	57	19		50	50			10	5	71	5		9
34. Heaths and Heathers.....	72	25	3		66	28	3	3		3	84	3		
35. Herbs.....	24	59	18		65	35					94			6
36.*Rhododendrons.....	40	33	27	0	47	47	6	0	6	20	67	7	0	0

TABLE 10c. - Continued

	Did the course cover the subject as expected?			Have you found the new information practical and useful?		
	% yes	% no	% no answer	% yes	% no	% no answer
General						
24. Early Herbaceous Plant Material.....	100	0	0	100	0	0
25.*Plant Material.....	88	7	5	95	2	3
26.*Plants for the Home.....	71	29		81	13	6
27.*Spring Wildflowers.....	78	15	7	87	5	8
28. Vegetables and Small Fruit	83	17		83	17	
29. Woody Plant Material.....	100			78		22
Specific						
30. Broad - leaved Evergreens.	100			100		
31. Cacti and Succulents.....	85	15		92		8
32.*Ferns.....	94	6		89		11
33.*Hardy chrysanthemums.....	86	10	4	95		5
34. Heaths and Heathers.....	88	6	6	84	3	13
35. Herbs.....	71	24	5	94		6
36.*Rhododendrons.....	80	13	7	87	7	6

received many negative answers as to whether the information derived had been practical and useful.

The craft courses as listed in Table 11a., page 61, represent subjects that are actually more complementary than based upon or dealing directly with horticultural principles. This group includes two of the most popular courses offered by Longwood Gardens, Christmas Decorations, and Flower Arranging. Beginning and/or Advanced Flower Arranging is offered every season and the demand keeps increasing. Christmas Decorations, offered every fall just before Christmas, does not have a high demand according to subjects suggested in the questionnaire but the classes are full each year.

On the average this group has the lowest rate of dropouts (8 percent) and the highest rate of returns (55 percent) for all the courses surveyed.

Four of the classes which received low marks for stimulation of thinking also were rated low for overall effectiveness (Table 11b. page 62). These courses (Christmas Decorations, 1967; Dried Flower Arranging; Advanced Flower Arranging, 1964-65; and Plant Photography) were each rated low in at least one other area. Christmas Decorations, 1967, received low ratings in all but the presentation of material.

Advanced and Beginning Flower Arranging, 1966-67, both

TABLE 11a.

CRAFT COURSES - GENERAL INFORMATION

	season(s) offered	total enrollment	% dropout a.	number noting refused enrollment	number mailed	number returned	% returned b.
37. Christmas Decorations.....	F'64/65/66	129	12	25	65	54	42
38. Christmas Decorations.....	F'67	39	3		26	20	51
39. Dried Flower Arranging.....	S'68	40	10	1	17	13	32
40. Flower Arranging.....	F'64/65	79	10		48	39	49
41. Flower Arranging, Advanced.	S'64/65	76	9		36	27	36
42.*Flower Arranging, Advanced.	F'66/67	37	8	31	33	26	70
43.*Flower Arranging, Beginning	S'66/F'67	56	7		50	39	70
44. Plant Photography.....	F'66	28	7	1	17	16	57
45. Preparation of Herbarium Specimens.	S'66	20	10	1	9	8	40

A. percentage that dropped course before completion
b. percentage return of total enrollment for course

TABLE 11b.

CRAFT COURSES - INSTRUCTION

	How well was the subject covered?					How well was your thinking stimulated?					How well was the material presented?				
	poor %	fair %	good %	excellent %	no answer %	poor %	fair %	good %	excellent %	no answer %	poor %	fair %	good %	excellent %	no answer %
37. Christmas Decorations.....	0	2	28	68	2	0	7	33	56	4	0	2	33	61	4
38. Christmas Decorations.....	5		40	50	10	10	25	20	40	5	5	5	40	45	5
39. Dried Flower Arranging....		15	23	54	9	8	8	38	38	8		15	23	54	8
40. Flower Arranging.....		8	38	51	3	3	8	33	54	2		8	46	41	5
41. Flower Arranging,Advanced.		4	40	56		4	15	22	55	4		7	26	59	8
42.*Flower Arranging,Advanced.		7	30	62	1		15	30	54	1		4	30	65	1
43.*Flower Arranging,Beginning	2	8	36	54		3	13	36	46			10	36	54	
44. Plant Photography.....	6	6	44	44		6	19	31	44			13	19	69	9
45. Preparation of Herbarium Specimens....	0	0	25	63	12	0	13	13	63	11	0	0	13	75	12

TABLE 11b. - Continued

	How well did the instructor work with the students?					How would you rate the overall effectiveness?				
	poor %	fair %	good %	excellent %	no answer %	poor %	fair %	good %	excellent %	no answer %
37. Christmas Decorations.....	0	4	30	63	3	2	0	31	65	2
38. Christmas Decorations.....		10	30	55	5	5	15	35	40	5
39. Dried Flower Arranging.....		8	23	54	15		23	23	38	16
40. Flower Arranging.....		15	26	56	3		13	38	46	3
41. Flower Arranging,Advanced...		7	30	63			15	26	59	
42.*Flower Arranging,Advanced...	4	7	27	62		4	4	38	54	10
43.*Flower Arranging,Beginning..	8	10	28	54		5	5	36	54	10
44. Plant Photography.....	6	13	38	31	12	6	13	56	25	
45. Preparation of Herbarium Specimens.....	0	0	25	63	12	0	0	50	50	0

received unfavorable ratings for the stimulation of thought. The 1964-65 Flower Arranging course received ten "good" and six "fair" ratings in evaluating how well the instructor worked with the students but received 15 "good" and five "fair" ratings for overall effectiveness.

As shown in Table 11c., page 65, in Christmas Decorations, 1967, one-half of the participants stated they had an above average familiarity with the subject and that it was involved with their hobby. Because of this and the professionals that took the course it was rated "simple" or "elementary" by seven people. One-half of the participants in Plant Photography also were interested because of their hobby and were only moderately familiar with the subject, but there are ratings of "elementary" to "much too difficult" showing that there was a wider spread in knowledge than had been indicated. One-fourth indicated the subject was covered as they had expected.

The coverage of Beginning Flower Arranging and Advanced Flower Arranging, 1966-67, was not what was expected either. This is a continuation of the dissatisfaction that was shown in Tables 11a. and 11b.

The subject coverage in Preparation of Herbarium Specimens and the negative conclusions relative to the usefulness of the information apparently arose from confusion over the purpose of

TABLE 11c.

CRAFT COURSES - PERSONAL - COURSE VALUES

	How familiar were you with the subject?				Reason for taking course.				Was the course					
	% little	% moderate	% above average	% no answer	% general knowledge	% hobby	% profession	% no answer	% elementary	% simple	% about right	% difficult	% much too difficult	% no answer
37. Christmas Decorations.....	37	44	16	3	59	39	0	2	4	6	89	0	0	1
38. Christmas Decorations.....	30	25	45		45	50	5		5	10	80			5
39. Dried Flower Arranging....	46	31	23		54	46			8		92			
40. Flower Arranging.....	49	41	10		38	59	3			3	92			5
41. Flower Arranging, Advanced.	22	63	15		33	67			4	7	78	4		7
42.*Flower Arranging, Advanced.	7	65	23	5	35	65				4	92	4		
43.*Flower Arranging, Beginning	62	38			49	46	5			5	82	8	3	2
44. Plant Photography.....	44	50	6		31	63	6		6		75	6	6	7
45. Preparation of Herbarium Specimens....	75	13	12	0	50	50	0	0	0	0	75	13	0	12

TABLE 11c. - Continued

	Did the course cover the subject as expected?			Have you found the new information practical and useful?		
	% yes	% no	% no answer	% yes	% no	% no answer
37. Christmas Decorations.....	98	2	0	96	0	4
38. Christmas Decorations.....	85	10	5	80	10	10
39. Dried Flower Arranging.....	77	15	8	85	8	7
40. Flower Arranging.....	90	8	2	97	3	
41. Flower Arranging, Advanced..	89	11		93	4	3
42.*Flower Arranging, Advanced..	88	12		96	4	
43.*Flower Arranging, Beginning.	82	15	3	95	3	2
44. Plant Photography.....	75	25		88		12
45. Preparation of Herbarium Specimens....	63	25	12	38	25	37

the course. Several participants thought that it would cover the preservation of plant material so that it might be used later for decorative purposes.

There are few trends evident from comparing a participant's education and the number of courses taken to the general course subject matter as scientific, applied, plant material or crafts. Table 12, page 68, consists of this information. In comparing the data of those people having taken two or more courses each number should be divided by four which is the average number of classes taken by participants in this group. This will give a more accurate comparison to those persons having taken only one class. About the same number of participants are included in both divisions.

The most obvious trend is the group taking the craft courses. These courses seem to be the first choice of a majority of the new participants and with no relation to educational levels.

The second trend is the higher participation in plant material courses by persons who had taken previous courses irregardless of education levels. This trend is evident in the specific - plant material courses and the general - plant material courses of those lower educational levels but who had taken other courses.

TABLE 12

EDUCATION VS. SUBJECT MATTER

ONE COURSE TAKEN	number of participants	number of participants per course division					
			applied		plant material		
Educational Attainment	number of participants	scientific	specific	general	specific	general	crafts
high school or less	38	3	9	6	4	4	12
1 year of college	11	1	1	1		3	5
2 years of college	36	1	2	9	4	3	17
3 years of college	12	1	1	2		3	5
associate degree	18	2	2	6	1	3	4
bachelor degree	85	4	19	11	9	15	27
masters degree	12	1	2	4		3	2
doctorate	6		3	1		2	
registered nurse	3			2		1	
TWO OR MORE COURSES TAKEN a.							
Educational Attainment							
high school or less	33	10	26	20	15	19	32
1 year of college	15	8	10	18	12	23	12
2 years of college	24	8	17	5	11	11	19
3 years of college	6	2	3	4	8	4	6
associate degree	16	3	7	11	10	8	9
bachelors degree	105	23	43	50	26	31	37
masters degree	20	7	8	11	7	9	11
doctorate	8	2	8	5	1	3	5
registered nurse	6	1	3	6	3	2	8

a. Numbers under the course divisions may not equal the number of participants included in that row since some participants have taken more than one course.

Land holdings have either a direct influence on the type of subject matter for which a participant enrolls or else has a common denominator which influences both aspects. This data appears in Table 13, page 70. Participants having larger areas of land tend to take more of the scientific, general-applied, and plant material courses. Those people having less than one-half of an acre are more likely to enroll in courses concerning specific-applied techniques or crafts.

The presence of woods, fields, and/or water on the properties of participants and the effect upon selection of courses is most evident when areas comprise less than 50 percent of the total area of the property. Table 14, page 71, relates subject area of scientific, applied, et cetera, to the number of courses taken. Participants who have taken one or two courses and whose property is covered less than one-half by woods, fields, or water tend to enroll more in crafts and the general areas of applied techniques and plant material. After a participant has taken three or more courses his emphasis is towards the scientifically oriented subjects and specific areas of applied techniques and plant materials especially if he has a wooded area. The extent of the wooded area does not seem to be as closely related as with participants who had taken one or two courses.

TABLE 13

LAND AREA VS. COURSE SELECTION

Extent of land surrounding participant's home	number of participants	number of participants per course division					
		scientific	applied		plant material		crafts
			specific	general	specific	general	
less than one-half acre	93	7	29	15	13	10	40
one-half to one acre	126	21	42	38	27	37	60
one to five acres	157	21	56	56	37	59	72
over five acres	124	24	40	46	37	39	50

NOTE: Numbers under course divisions may not equal the number of participants included in that row since some participants have taken more than one course.

TABLE 14

NUMBER OF COURSES TAKEN AND EXTENT OF WOODS, FIELDS, AND WATER VS. SUBJECT MATTER

ONE OR TWO COURSES TAKEN area and extent surrounding participant's home	number of participants	number of participants per course division					
		scientific	applied		plant material		crafts
			specific	general	specific	general	
woods							
less than 50 percent	101	10	22	38	12	23	35
more than 50 percent	31	1	8	12	1	8	18
fields and water							
less than 50 percent	48	7	27	41	17	19	31
more than 50 percent	62	5	13	15	14	10	8
THREE OR MORE COURSES TAKEN area and extent surrounding participant's home							
woods							
less than 50 percent	42	14	45	39	28	27	20
more than 50 percent	17	17	16	19	24	16	14
fields and water							
less than 50 percent	38	12	25	18	33	20	13
more than 50 percent	33	11	21	29	15	18	14

NOTE: Numbers under course divisions may not equal the number of participants included in that row since some participants have taken more than one course.

CONCLUSIONS

Consideration will now be given to whether this educational program is accomplishing its objectives and meeting any needs of the community. As stated before, this program is "...planned for the serious amateur gardener who wishes to learn more about plants, practical horticulture, or the botanic principles on which horticulture is based".

This type of program does not appeal to everyone and is not meant to. Two factors quickly limit that part of the population to which it does appeal. First is the subject matter, horticulture. It is a generally held concept that man, whether as a civilization or a single entity, will satisfy his needs for self-preservation and security and have leisure time before establishing a garden. Likewise today people must develop their own security and become socially established in a way that would permit them to use their time for their own enjoyment, as with gardening. This would tend to eliminate those in lower economic and social levels who do not have the time, opportunity or inclination to garden.

The second limiting factor is the acceptance by adults of additional education. Not every adult will participate in an

educational program even though it is in an area of his interest. As pointed out in the previously mentioned Douglah and Moss report[10], participation tends to be higher when the person is in the labor force, is in higher income and occupational levels, is over 35, has two children, and is an urban dweller. This study agreed with these conclusions except that the spouse was usually in the labor force and there was an average of less than one child per participant. Brunner[11] as well as Douglah and Moss emphasizes the importance of social acceptance in an adult's decision to resume his education. Though limited by these factors to this "small" group the program's appeal must be aimed at everyone interested in botany or horticulture at all levels of knowledge and skill.

The total offering of courses in the past five years may be found listed earlier with their evaluations. It may be seen that these vary from simple courses such as Christmas Decorations and botany to more scientific and technical studies in taxonomy (Families of Ornamental Plants) and physiology. The period of study varies from one to twelve meetings.

Only a few horticultural organizations in the United States have a program equal to or more extensive than Longwood Gardens'. All of the following institutions offer at least ten subjects per year:

New York Botanical Garden, Bronx, New York

Brooklyn Botanic Garden, Brooklyn, New York
Morton Arboretum, Lisle, Illinois
Santa Barbara Botanic Garden, Santa Barbara, California
Department of Arboreta and Botanic Gardens, County of Los Angeles, Arcadia, California
Fairchild Tropical Gardens, Miami, Florida
Arboretum of the Barnes Foundation, Merion, Pennsylvania

Within 25 miles of Philadelphia are six principle groups offering short courses on a regular basis during the year. Also within this radius are more than 100 independent and specialized smaller gardening groups and four major, recognized, horticulturally developed areas that are open to the public. The Pennsylvania Horticulture Society, the Tyler Arboretum of Lima, the Barnes Foundation of Merion, and Longwood Gardens of Kennett Square are the area leaders in horticultural education collectively offering about 40 scheduled short courses to over 100 students each year. Definitely there is a gardening public that seeks more information.

One of the major problems encountered in this study was the basis for the failure of participants to answer and return the questionnaire. A sample of the people who did not return their questionnaire were contacted by telephone. Their four main excuses were: (1) I haven't had time to answer the questions, (2) It has been too long since the classes were taken, (3) I didn't think my opinion would matter, and (4) I never registered for any courses so I therefore ignored it. What ulterior reasons the people might have had could not be clearly determined. But "no

response" is not a random process but probably represents some form of bias. It might be disinterest, an attitude or personality problem, or just a time or distance problem.

The reasons for non-returns are very important in conceiving a clear prospective of each class. The following chart shows the average percentage returns for the classes as they were offered each year.

season	spr.	fall	spr.	fall	spr.	fall	spr.	fall	spr.
year	1964	1964	1965	1965	1966	1966	1967	1967	1968
returns	34%	40%	39%	61%	43%	54%	53%	53%	37%

The peak in the fall of 1965 is caused by the returns from Herbs, the class with the highest rate of returns. If the classes with the highest and lowest returns of each year are removed, the percentage response changes only slightly.

season	spr.	fall	spr.	fall	spr.	fall	spr.	fall	spr.
year	1964	1964	1965	1965	1966	1966	1967	1967	1968
returns	30%	40%	40%	40%	43%	58%	53%	53%	35%

The returns tend to decrease in the earlier years mainly due to the smaller number of returns sent those participants by the method of selection. But the returns of Spring, 1968, are surprisingly low. It is generally thought that an evaluation should not be attempted within one month after a meeting if the material involved the application of principles. This questionnaire was mailed six months after the completion of the courses. It might be of interest if this same population could be inter-

viewed again in a few years to see if the results are similar.

In question number 13, page 17, there appears to have been more people accepted than had applied. This is due to those people who had applied a number of times and had been accepted only once or twice, such as those having applied four times and having been accepted once. The sum of both columns will be found to be equal (691). There is a rather high incidence of repeating in that about one-half of the people who take one course will register for another. One-fourth of the total group will eventually take over four courses. This means that of the 500-600 people registering each year, one-half have taken a course previously.

A number of difficulties are associated with this questionnaire. There is the inability of the average participant to accurately estimate percentages, as in the case of the composition of their grounds (Question no. 3) and who does the horticultural work (Question no. 6). Only a minority answered both of these questions with percentages that equaled 100.

Also, there needs to be a clarification of "...regular, professional help...". Too many people were unsure what this meant. Perhaps with the specification of regular as being every week, twice a month, et cetera, and professional as being "licensed", this question could be made more precise.

The general attitudes reflected by this study show in effect that the educational program of Longwood Gardens is accomplishing its goals and serving a need of the community but to a rather limited extent and often using ineffectual means. The area receiving the greatest number of comments was that of teaching methods. Perhaps new approaches and use of equipment should be discussed with all instructors before a course begins. Included might be ways to avoid continuous lecturing in a course, the use and control of class discussion, and how to make demonstrations more effective. Use of equipment is an important factor. It should be explained that there are devices other than the slide projector. A course relying heavily on slides can become just as boring as one consisting solely of lectures. More use should be made of motion pictures, overlay projection, microscopes and micro-projection. By taking advantage of the various projection techniques the size of classes could in most instances be changed from 20 or 25 students to 100 and be held in the auditorium with no detrimental effects to the dissemination of information to the students while contacting a greater number.

FOOTNOTES

[1]Jack London, "Program Development in Adult Education", Handbook of Adult Education in the United States, (Washington, D.C., Adult Education Association of the U.S.A., 1960), p. 73.

[2]D. E. Wilder, "Problems of Evaluation Research", An Overview of Adult Education Research, (Chicago, Adult Education Association of the U.S.A., 1959), p. 243.

[3]Burton W. Kreitlow, "Research in Adult Education", Handbook of Adult Education in the United States, (Washington, D.C., Adult Education Association of the U.S.A., 1960), p. 108.

[4]R. P. Kropp and Coolie, Verner, "Attitude Scale Technique for Evaluating Meetings", Adult Education, Vol. 7, No. 4, (Summer, 1957), p. 102.

[5]M. Douglah and G. Moss, "Differential Participation of Patterns of Adults of Low and High Educational Attainment", Adult Education Journal, Vol. 18, No. 4, (1968), pp. 247-259.

[6]Edmond deS. Brunner, ed., Overview of Adult Education Research, (Chicago, Adult Education Association of the U.S.A., 1959), p. 102.

[7]K. M. Miller, "Evaluation in Adult Education", International Social Science Bulletin, Vol. 7, No. 3, (1955), pp. 430-442.

[8]Longwood Gardens Short Course Registration Form.

[9]To figure the average years of education or training beyond high school the following values were applied:

education level	years
associate degree	2
bachelors degree	4
masters degree	6
doctorate	8
registered nurse	2

[10]Douglah and Moss, p. 247.

[11]Brunner, p. 102.

WORKS CITED

Brunner, Edmond deS., Overview of Adult Education Research, edited by Malcolm S. Knowles, Chicago, Adult Education Association of the U.S.A., 1959.

Douglah, M., and Moss, G., "Differential Participation of Patterns of Adults of Low and High Educational Attainment", Adult Education Journal, Vol. 18, No. 4, 1968.

Kreitlow, Burton W., "Research in Adult Education", Handbook of Adult Education in the United States, Washington, D.C., Adult Education Association of the U.S.A., 1959.

Kropp, R. P., and Verner, Coolie, "Attitude Scale Technique for Evaluating Meetings", Adult Education, Vol. 7, No. 4, Summer, 1957.

London, Jack, "Program Development in Adult Education", Handbook of Adult Education in the United States, Washington, D.C., Adult Education Association of the U.S.A., 1960.

Longwood Gardens Short Course Registration Form.

Miller, K. M., "Evaluation in Adult Education", International Social Science Bulletin, Vol. 7, No. 3, 1955.

Wilder, D. E., "Problem of Evaluation Research", An Overview of Adult Education Research, edited by Malcolm S. Knowles, Chicago, Adult Education Association of the U.S.A., 1960.

OTHER WORKS CONSULTED

Densmore, Max L., An Evaluative Analysis of Selected University Conference Programs Conducted at Kellogg Center for Continuing Education, Michigan State University, Unpublished Ph.D. dissertation, Michigan State University, 1965.

Partens, M., Surveys, Polls, and Samples, New York, Harper and Row, 1950.

Turabian, Kate L., A Manual for Writers, Third Edition, Chicago, The University of Chicago Press, Ltd., 1969.