#### THE EFFECT OF KEY

UPON EMOTIONAL RESPONSE TO MUSIC

A Thesis Presented for the Degree of Master of Arts

BY

Janet Souders Crist, B.S.M.

THE OHIO STATE UNIVERSITY

1947

Approved by:

to Wilson

## TABLE OF CONTENTS

	age
ACKNOWLEDGEMENTS	I
Chapter	
I MUSIC CAUSES MANY ASSOCIATIONS	l
II PROCEDURE OF THE EXPERIMENTS	4
III SUMMARY OF DATA GAINED FROM THE EXPERIMENT	16
IV SIGNIFICANCE OF DATA REGARDING KEY	49
V CHARACTERISTICS OF THE MUSIC OTHER THAN KEY WHICH DETERMINED THE CLASSIFICATION	52
VI GENERAL SUMMARY	57
APPENDIX	59

## TABLE OF CONTENTS

Plate		Page
I	 Questionnaire Used in the Main Violin Experiment $\ldots$	8
II	 Questionnaire Used in the Orchestral Experiment	12
III	 Questionnaire Used in the Piano Experiment	14
Table		
I	 The Per Cent of Total Choices of Key Placed in Each of the Divisions for the Piano	17
II	 The Per Cent of Total Choices of Key Placed in Each of the Divisions for the Violin	19
III	 The Per Cent of Total Choices of Key Placed in Each of the Divisions for the Orchestra	21
IV	 The Per Cent of Total Choices of Key Placed in Each of the Divisions for All of the Instruments	24
v	 Per Cent of Times Each Key Was Placed in Division I (Dignified, Majestic)	26
VI	 Per Cent of Times Each Key Was Placed in Division II (Lyrical, Serene, Restful)	28
VII	 Per Cent of Times Each Key Was Placed in Division III (Humorous, Delicate, Brilliant)	30
VIII	 Per Cent of Times Each Key Was Placed in Division IV (Formal and Classic in Design)	32
IX	 Per Cent of Times Each Key Was Placed in the Unan- swered Division	34

# TABLE OF CONTENTS

Table			Page
X		Per Cent of Choices Placed in Division I (Dignified, Majestic)	38
XI		Per Cent of Choices Placed in Division II (Lyrical, Serene, Restful)	39
XII		Per Cent of Choices Placed in Division III (Humorous, Delicate, Brilliant)	40
XIII		Per Cent of Choices Placed in Division IV (Formal and Classic in Design)	41
XIV		The Place of the Three Keys Determined by Per Cent of Choices in Each of the Four Divisions	42
XV		The Keys Arranged in the Order of Their Highest Per Cent of Choices in the Total of the Three Experiments .	43
XVI		The Place (Determined by Per Cent of Choice) of Each Key in Each of the Four Divisions	45
XVII		Per Cent of Choices in Each Key Placed in Divisions I, II, III, IV	47
XVIII		Analysis of the Classification of the Piano Com- positions	60
XIX		Analysis of the Classification of the Violin Com- positions	65
XX	<b></b>	Analysis of the Classification of the Orchestra Compositions	70

#### ACKNOWLEDGEMENTS

I wish to express my grateful acknowledgement and appreciation to the professors of the Graduate School in the School of Music of The Ohio State University for their interest and valuable guidance during my study at this University.

I am especially indebted to Dr. M. Emett Wilson for his sincere guidance in the planning and supervising of the experiments. I also wish to thank him for his assistance in preparing this manuscript and for his valuable suggestions regarding the content and the arrangement of the material in this thesis. Dr. Wilson's extensive background, knowledge, and experience has been a constant inspiration to me throughout my study in the Graduate School.

I wish to express my personal appreciation to all of the musicians who participated in the experiments. Without their cooperation, this thesis would not have been possible.

I wish to sincerely thank my parents for their interest in the preparation of this thesis. To my mother I am especially grateful, for without her counsel, sacrifice and inspiration throughout my entire school career this goal would have been unattainable.

- I -

#### Chapter I

#### MUSIC CAUSES MANY ASSOCIATIONS

The emotional effect of music upon people has always been a subject of much discussion.

Schumann denies that "this or that feeling, in order to be correctly expressed in music, must be translated in but one especial key."1

"Schubert, on the other hand, professed to have found in some keys the characteristic expression of some feelings." For instance, he finds discontent, discomfort, worrying, or anxiety in the key of G minor.<sup>2</sup>

Many experiments and scientific studies have been conducted to analyze the degree of emotional response to music and the amount of uniformity in that response.

Schoen and Gatewood found that, generally speaking, emotions and moods are more often reported as a result of vocal music than instrumental music. However, instrumental music may arouse quite as definite and intense emotional responses as vocal music.<sup>3</sup>

Schoen and Gatewood in another experiment found that a given musical selection will arouse a certain definite reaction and will arouse the same reaction on different occasions in a large proportion of the people.<sup>4</sup>

<sup>1.</sup> Schoen, Max; The Varieties of Musical Effects, Chapter IV, pp. 71, The Psychology of Music; The Fonald Fress Co., New York; 1940.

<sup>2.</sup> Ibid. pp. 71

<sup>3.</sup> Schoen, M. and Gatewood, E. L. <u>Problems Related To The Mood Effects</u> of <u>Music</u>, Chapter VIII, pp. 152-183; Schoen, M.; <u>The Effects of</u> <u>Music</u>; New York, Harcourt, Brace, 1927

<sup>4.</sup> Ibid. Chapter VII, pp. 13-157

It has often been stated that music not only expresses emotion but by controlling certain factors such as tempo, rhythm, melody, harmony, polyphony, mode, and key, music can be made to express a particular emotion.

Kate Hevner has experimented with emotional qualities of the major and minor modes. She found that all of the historically affirmed mood characteristics of the two modes had been confirmed in most cases with a substantial majority of opinion.<sup>5</sup>

Dr. Hevner conducted a similar experiment with pitch and tempo. As a result of this experiment she concluded that pitch and tempo show themselves to be of the greatest importance in establishing mood, but tempo plays the larger part of the two. $^6$ 

The most commonly mentioned effect of key is in the realm of color vision. The diatonic scale has been compared with the seven colors of the color spectrum.

Katz found a rare case of association between key and color.7

A more recent and most thorough study in color music is reported by Karwaski and Odbert. These persons found no direct relationship between color and music, but certain general relationships were found to recur constantly.<sup>8</sup>

Power gives a detailed analysis of the emotional response

8. Ibid.

<sup>5.</sup> Hevner, K., The Affective Character of the Major and Minor Modes in Music. <u>Amer. J. Fsych.</u>, 1935, Vol. 47, 103-118.

<sup>6.</sup> Hevner, K., The Affective Value of Pitch and Tempo in Music. <u>Amer.</u> J. Psych., 1937, Vol. 49, 621-630.

<sup>7.</sup> Schoen, Max; The Varieties of Musical Effects, Chapter IV, pp. 72, The Psychology of Music; The Rinald Fress Co., New York; 1940.

that each key gives to him.9

From the conflicting opinions regarding the importance of key in the emotional effects of music, it would appear that further experimentation in this subject would bring interesting data.

The problem investigated in this thesis is the effect of key upon emotional response to music.

These experiments test the statement which is often made that a certain key will create a definite emotional response and that different keys will each establish a different mood reaction.

With the above hypothesis in mind, we shall expect to find: 1. Which compositions rate the highest per cent of agreement in this type of response in each key.

2. Which mood division best fits each composition.

3. What key pattern, if any, is found in each mood division.

.4. What keys rate highest in each division.

5. What keys rate lowest in each division.

6. What other factors would influence the mood classification of each composition.

9. Ibid.; pp. 73

#### Chapter II

#### PROCEDURE OF THE EXPERIMENTS

Two preliminary experiments were first conducted to determine the advisability and procedure of more extensive experimentation.

Being a violinist, the writer is naturally interested in violin music. This explains why the preliminary experiments and the first main experiment were taken from the literature of the violin.

The persons who participated in the preliminary experiments were nearly all graduate students in the school of music of The Ohio State University. They were violinists or were very familiar with the violin literature.

Hereafter in this thesis I will refer to the persons who participated in the experiments as "subjects".

Each subject was presented with a sheet which contained a list of fifty violin compositions. They were given a second sheet which listed several different mood classifications:

1. Dignified, majestic.

2. Sad.

3. Flaintive.

4. Lyrical.

5. Serene, restful.

6. Humorous, playful.

7. Brilliant.

8. Light, delicate.

9. Not familiar enough with number.

10. Unclassified.

- 4 -

The subjects were asked to place each of the compositions into one of the mood classifications which seemed the most appropriate for that composition.

Throughout the preliminary experiments and the main experiments each subject was told that there were no "right" or "wrong" answers, but that each musician was expressing an opinion, and each person had a perfect right to his own personal feeling about each composition.

In the preliminary and final experiments, the subjects who filled out the questionnaires did so at their leisure and returned them when they were completed. It would have been possible for the subjects to have secured the score of the compositions to have studied and played or to have heard a phonograph recording of the compositions listed. Most of the people did not have time to do this and were not expected to do so. As a result, most subjects answered the questionnaire almost entirely from their past experiences with the compositions.

Few of the subjects could recall all of the compositions listed and in such instances their questionnaire remained blank for these numbers.

The subjects who completed the preliminary blanks were asked to add any comments or suggestions which came to their minds as they worked with the questionnaire. These comments and suggestions pointed the way to further experimentation and were very helpful in planning the procedure of the main experiments.

From this first preliminary experiment three things became apparent:

- 5 -

 The compositions must be of a more familiar character since it was necessary for the subjects to classify most of the compositions from memory.

2. There were too many mood classifications listed. Most subjects combined several of the mood classifications to establish a general mood quality. Consequently two or more mood classifications were gathered into a larger and more inclusive emotional division.

The three divisions which were used in the second preliminary experiment and the main experiments were:

I. Dignified, majestic.

II. Lyrical, serene, restful.

III. Humorous, delicate, brilliant.

3. There were some compositions which seemed difficult for some persons to classify. A fourth classification which was "Formal and classic in design" seemed to solve the difficulty.

In the second preliminary experiment the subjects were again presented with a list of fifty violin compositions. The compositions which were found to be unfamiliar in the first experiment were omitted from the second list. The second list was completed with more familiar selections.

This second experiment was conducted in a similar manner as the first experiment which has been previously discussed.

The results of these two preliminary experiments showed that experimentation on a larger scale would be justifiable.

The first main experiment was next prepared. Seventy-five violin compositions were used for this experiment instead of the pre-

- 6 -

vious number of fifty. This, of course, secured the mood reaction to more compositions and yet did not make the list too long for the subjects to complete.

Criteria considered in choosing the compositions were:

1. Familiarity of compositions to the most of the subjects.

2. Variety of composers whose works would fall into the

classic, romantic, or modern periods.

3. Variety in type of composition

a. Movements from concertos.

b. Movements from sonatas.

c. Other concert solos.

d. Pieces to display virtuosity.

e. Pieces with special technical problems in bowing or left hand technic.

f. Short encore numbers.

4. Variety of accompaniment. Included are movements of several solo sonatas, numbers with piano accompaniment, and numbers with orchestral accompaniment.

5. Variety in grade of difficulty.

6. Variety in length of composition.

The numbers were chosen without regard for key. Thus the experiment was entirely a fair and honest testing of the problem of the importance of key to mood classification.

A sample of the violin questionnaire is on the page following.

- 7 -

	Classify t	he following compositions into one of the four divisions:	
		T Dignified majortia	
	· · · · · · · · · ·	TT Ivnian composition Later Alerticated . Later	
	ana an	II. Lyrical, Screlle, resciul.	
		TV. Formal and classic in design	
		14. LOIWET GIG CTERRIC THI GERRILL	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1
		1. Air for the G String - Bach	gan e st
	······································	2. Prelude in E (Sonata VI for Violin alone) - Bach	n ang sa
	······································	3. Gavotte and Rondo (Sonata Vi for Violin alone) - Bach	
		4. Chaconne (Sonata in D Minor for Violin alone) - Bach	NATION, 1
		5. Concerto in D Major, 3rd Movement, Rondo - Beethoven	
		6. Romance in G - Beethoven	х <sub>1</sub> 8 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
		7. Romance in F - Beethoven	•
	·	8. Sonata in F (Spring) No. 5, 1st Movement - Beethoven	•*************************************
		9. Minuet - Boccherini	
		10. Adoration - Borowski	nd ee ee
		ll. Concerto in D - 3rd Movement (Allegro giocoso) - Brahms	
		12. Concerto in G Minor - 2nd Movement (Adagio), - Bruch	
		13. La Folia - Corelli ( ( Salaros Les ell) most estre (	
		14. Poeme - Chausson de la contraction de la con	e noter i
		15. Spanish Dance No. 1 - DeFalla-Kreisler	
		10. Souvenir - Draia, and 1990 model for distance of the	****
	• • • • • • • • • • • • • • • • • • • •	17. Valse - Bluette - Drigo - Auer	ana a t
		10. LoCincuration Cohristian Advisition Control Contro	
		20 From the Catching - Gapriel - Marie	910 y
		21. Spanish Dance . Granado . Whot al a statistic and the statistic	
		22. Sonata No. TV D Major Lift Month (Vdorio) - Handal	
		23. Sonata No. IV, D Major, 18t Movt. (Adagio) - Handel	
		24. Sonata No. IV, D Major, 2rd Movt. (Larghetto) - Handel	
		25. Sonata No. VI. E Major 1 St. Movt. (Adagio) - Handel	
		26. Largo - Handel - General - Maria	
		27. Allegro Brilliant - Ten Have	
1		28. Hora Staccato - Heifetz - Turas	
		29. Hejre Kati - Part I - Lento, moderato, lento - Hubay	
		30. Hejre Kati - Part II - Allegro, Presto - Hubay	
.'		31. Zephyr - Hubay	
		32. Caprice Viennois - Kreisler	
		33. Praeludium and Allegro (Style of Pugnani) - Kreisler	
		34. The Old Refrain - Kreisler	
		35. Hondino (Theme by Beethoven) - Kreisler	
		30. Schon Hosemarie - Kreisler	
		37. Tambourin Uninois - Kreisler	
		20. Symphonie Espagnole, 5th Movement (Scherzo) - Lalo	
	······	10 Moditation (Their) New States	
		40. Medication - (Inals) - Massenet	
		42. Concerto in E Minor, 2nd Movt. (Andante) - Mendelssohn	
		42. Concerto in E Minor, 3rd Movt. Finale - Allegro Vivace - Mendels	sohn
		44. Concerto in D Majon 2nd Mart Banda Marant	
		45. Minuet - Paderewski - Kreislen	
		46. Caprice in A Minor No. 21 (Variationa) Decening	
, i e	· · · · · · · · · · · · · · · · · · ·	47. I Palpiti - Rossini - Paganini	
		48. La Campanella - Paganini March	
· .		49. Moto Perpetuo - Paganini	
		50. Witches Dance - Paganini	

(Over)

QUESTIONNAIRE USED IN THE MAIN VIOLIN EXPERIMENT

- 8

PLATE I

<u>.</u>		and the second
	1)• PCUGLSO - ISTAULATION - ATTAULATE - OZJAUQ - C/	
·	LA. POLORALS BELLET NO. S. NO. SUBJECT STATES OF LOCATION STATES AND STREET STATES	
	73. Concerto in Minor, Srd Move, (Allegio, alle Mineral)	
	72. Concerto in D Minor, End Myt, (homance) - Mieniawahi	
na di serie di serie Serie di serie di seri	71. Gaprice in E. Major (Alle Saltereria) - Michigan	
•	70. Caprice in A Minor - Wiendawski 101. Caprice in A Minor	And a second sec
	69. Prize Song (Die Meistersinger) Wagner - Wilnern	
	68. Concerto In A Minor Op. 3, 3rd Movt, (Presto) - VIVALOI	
	67: Concerto in A Minor Op. 3, 1st Movt. (Allegro) Vivaldi	
	66. Chaconne – Vitali	
	65. Concerto in A Minor, No. 22, lat Movt. (Moderato) - Viotti	
	97 Larentelle (Correct) Ho. Schedxuelle Steader 19	
•	63. Concerto in D Major. 3rd Movt Finale - Tschaikowsky	
	62. Andante Cantabile (Quartet) - Tschaikowsky andante Cantabile	
	Tottel & ut other in the second of the secon	
	suiledis (oilow ib oiseba) drow back and the distance of the second of t	
	S. Ave maria - Schubert - Withheld - Ston and Could all and the	-
	St. Stable an El (Somethin Tonic Mind and Stable of Stab	
	56. Gypsy Airs - Sarasate	
	55. The Swan - Saint - Baens	
	54. Rondo Cappricioso - Saint - Saens	
	53. Favane - Ravel - air. Engelter a state and a state of the state of	
•	52. Cavatina - Rationa - Second - Tish - Entis - Second	۰ . مربعه مع در بر مربع مربع مربع می مربع می مربع
and the second second	51. Dancing Doll - Poldini	
	n en	
	Manully the following compositions into one priche dias divisions:	

· ·

QUESTIONNAIRE USED IN THE MAIN VIOLIN EXPERIMENT

In order to obtain a variety of opinion, subjects with different backgrounds and training were selected for the main experiment.

Fifty subjects completed the questionnaires in the violin experiment.

Persons participating in the experiment were:

1. Teachers of music:

- a. Several college professors who taught applied music and music theory courses.
- b. Musicians engaged in the field of private music instruction.

c. Public school music teachers and supervisors.

2. Graduate students majoring in music who have had extensive teaching and playing experience. Most of these persons would also fit into classification number one.

3. Advanced undergraduate students majoring in music.

4. Other students, mostly from Ohio State University, who had a keen interest in music.

5. Professional players.

6. Other interested musicians. The majority of these were violinists or persons who were very familiar with the violin literature.

When the early results of the violin experiment were being tabulated, it became apparent that valuable data and comparisons could be gained from two similar experiments with orchestra and piano compositions.

The second main experiment was then prepared. Seventy-five orchestral compositions were used for this experiment.

- 9 -

Criteria considered in choosing the compositions were:

1. Familiarity of compositions to the most of the subjects.

2. Variety of composers whose works would fall into the

classic, romantic, or modern periods.

3. Variety in type of composition:

a. Movements from symphonies.

b. Overtures.

c. Movements from suites.

d. Exerpts from opera and oratorio.

e. Other symphonic works.

f. Short numbers.

In contrast to the violin experiment, these numbers were

chosen with regard to key.

When the key range of the violin compositions was tabulated, the following keys were represented:

Еb	Major	 six compositions
Βъ	Major	 two compositions
G	Minor	 three compositions
F	Major	 two compositions
D	Minor	 two compositions
C	Major	 six compositions
A	Minor	 eight compositions
G	Major	 seven compositions
Е	Minor	 three compositions
D	Major	 twenty compositions
В	Minor	 three compositions
A	Major	 seven compositions
Ε	Major	 six compositions

The same keys and the same number of compositions in each key were used in both the orchestra and piano as were used in the violin experiment. This was done so that the results could be accurately compared and some fair conclusions drawn. Because of this pattern of keys previously mentioned, many great and famous compositions had to be excluded from the lists.

, The orchestra experiment was conducted in a similar manner as the violin experiments which have been previously discussed in this thesis.

A sample of the orchestral questionnaire is on the page following.

#### PLATE II

Classify the following compositions into one of the four divisions: I. Dignified, majestic. II. Lyrical, serene, restful. III. Humorous, delicate, brilliant. IV. Formal and classic in design. 1. Fuguein G Minor (Little) - Bach (Calliet) 2. Prelude and Fugue in D Minor - Bach (Demarest) 3. Leonore Overture No. 3 - Beethoven 4. Turkish March (Ruins of Athens) - Beethoven 5. First Movement Symphony No. 3 (Erocia) - Beethoven 6. Fourth Movement Symphony No. 3 (Erocia) - Beethoven - 7. Fourth Movement Symphony No. 5 - Beethoven \_ 8. First Movement Symphony No. 6 (Cheerful Impressions) - Beethoven 9. Second Movement Symphony No. 7 - Beethoven 10. Fourth Movement Symphony No. 9 - Beethoven 11. Roman Carnival Overture - Berlioz \_ 12. Prelude to "Carmen" - Bizet \_ 13. First Movement Symphony No. 2 - Brahms \_ 14. Fourth Movement Symphony No. 2 - Brahms \_ 15. Pizzicato Polka (Sylvia) - Delibes \_ 16. Valse Lente (Ballet Sylvia) - Delibes \_ 17. Carneval Overture - Dvorak \_ 18. Pomp and Circumstance No. 1 - Elgar \_ 19. Salut D' Armour - Elgar 20. Overture to "Stradella" - Flotow 21. First Movement Symphony in D Minor - Franck 22. Third Movement Symphony in D Minor - Franck 23. Morris Dance (Henry VIII Dances) - German \_ 24. Russian Sailors! Dance (Red Poppy) - Gliere 25. Overture to "Ruslan and Ludmila" - Glinka \_ 26. Grand Waltz (Faust) - Gounod 27. Harvest Hymn - Grainger \_ 28. Morning (Peer Gynt Suite No. 1) - Grieg 29. Anitra's Dance (Peer Gynt Suite No. 1) - Grieg 30. In the Hall of the Mountain King (Peer Gynt Suite No. 1) - Grieg 31. Solvejg's Song (Peer Gynt Suite No. 2) - Grieg 32. In The Village (Caucasian Sketches) - Ippolitov-Ivanov \_ 33. Procession of the Sardar (Caucasian Sketches) - Ippolitov-Ivanov \_ 34. Argonaise (Le Cid) - Massenet 35. Scherzo (Midsummer Night's Dream) - Mendelssohn 36. War March of the Priests (Athalia) - Mendelssohn 37. First Movement Symphony No. 3 (Scotch) - Mendelssohn 38. Coronation Marche (La Profete) - Meyerbeer 39. Overture to "Don Giovanni" - Mozart 40. Overture to "The Magic Flute" - Mozart 41. Overture to "The Marriage of Figaro" - Mozart 42. Serenade (Eine Kleine Nachtmusik) - Mozart 43. First Movement Symphony No. 35 (Haffner) - Mozart 44. Fourth Movement Symphony No. 41 (Jupiter) - Mozart 45. First Movement "Classical Symphony" - Prokofieff 46. Bolero - Ravel 47. Polonaise from "Christmas Night" - Rimsky-Korsakov 48. First Movement "Sea and Sinbads Ship" (Scherazade) - Rimsky-Korsakov 49. Second Movement "Tale of Kalendar Prince" (Scherazade) - Rimsky-Korsakov 50. Third Movement "Young Prince and Princess" (Scherazade) - Rimsky-Korsakov 51. Flight of the Bumble Bee - Rimsky-Korsakov 52. Dance Macabre - Saint-Saens 53. First Movement Symphony No. 8 (Unfinished) - Schubert 54. Second Movement Symphony No. 8 (Unfinished) - Schubert 55. First Movement Symphony No. 4 - Sibelius \_ 56. Artists' Life Waltz - Strauss 57. March (Nutcracker Suite) - Tschaikowsky 58. Dance of the Candy Fairy (Nutcracker Suite) - Tschaikowsky 59. Dance Arabe (Nutcracker Suite) - Tschaikowsky 60. Dance of the Militron Flutes (Nutcracker Suite) - Tschaikowsky 61. Waltz of the Flowers (Nutcracker Suite) - Tschaikowsky 62. Waltz (Screnade For Strings) - Tschaikowsky 63. Waltz (Sleeping Beauty) - Tschaikowsky 64. First Movement Symphony No. 5 - Tschaikowsky 65. Second Movement Symphony No. 5 - Tschaikowsky 66. Third Movement Symphony No. 5 - Tschaikowsky 67. Overture to "Euryanthe" - Von Weber 68. Overture to "Oberon" - Von Weber 69. Invitation to the Dance - Von Weber 70. Skaters' Waltz - Waldtenfel 71. Forest Murmurs (Siegfried) - Wagner 72. Overture to "Die Meistersinger" - Wagner 73. Overture to "Rienzi" - Wagner 74. Overture to "Tannhauser" - Wagner

\_\_\_\_ 75. Prelude to Act III (Lohengrin) - Wagner

As in the violin experiment, fifty subjects again completed the questionnaires.

The subjects selected for this experiment were similar to those listed on Page 9 when discussing those who participated in the violin experiment.

The subjects were not all violinists, however, but were players on many different instruments.

The final main experiment was the piano experiment. Seventyfive piano compositions were used for this experiment.

Criteria for selecting the compositions was similar to those discussed on Page 10.

Because of the pattern of keys listed on Page 10, it was difficult to find the necessary number of well known compositions in all of the desired keys. Many piano compositions have very indefinite titles and are identified by opus number. Many of these compositions were not included on the list because subjects could not recall the composition simply by an opus number.

A sample of the piano questionnaire is on the page following.

- 13 -

### PLATE III

Classify the following compositions into one of the four divisions: I. Dignified, majestic. II. Lyrical, serene, restful. III. Humorous, delicate, brilliant. IV. Formal, and classic in design. 1. Tango in D - Albeniz 2. Invention No. 1 in C Major (Two Part) - Bach 3. Prelude No. 1 in C Major (Well Tempered Clavichord) - Bach 4. Prelude in D Major (Well Tempered Clavichord) - Bach 5. Fugue in D Major (Well Tempered Clavichord) - Bach 6. Prelude and Fugue in A Minor - Bach 7. Chromatic Fantasy and Fugue - Bach 8. Fur Elise - Beethoven 9. Second Movement, Sonata op. 2 No. 2 - Beethoven 10. First Movement, Sonata op. 10 No. 3 - Beethoven 11. First Movement, Fantasia Sonata op. 27 No. 1 - Beethoven 12. Minuet in G - Beethoven 13. Les Sylvians (The Fauns) - Chaminade 14. Nocturne Etude in E Major op. 10 No. 3 - Chopin 15. Nocturne in E<sup>b</sup> Major op. 9 No. 2 - Chopin 16. Grande Valse Brillante op. 18 - Chopin \_ 17. Polonaise Militaire op. 40 No. 1 - Chopin 18. Valse Brillante op. 34 No. 2 - Chopin 19. Prelude in E Minor op. 28 No. 4 - Chopin \_ 20. Minstrels - Debussy 21. Ondine - Debussy \_ 22. Second Arabesque - Debussy \_ 23. Prelude, Chorale, and Fugue - Franck \_ 24. Gavotte - Gossec \_ 25. Funeral March of a Marionette - Gounod \_ 26. Country Gardens - Grainger 27. Butterfly - Grieg 28. First Movement Concerto in A Minor - Grieg 29. Elfin Dance - Grieg 30. Nocturne No. 4 op. 54 - Grieg 31. The Last Spring - Grieg 32. The White Peacock - Griffes 33. The Harmonious Blacksmith - Handel 34. Gypsy Rondo - Haydn \_ 35. Amaryllis - Louis XIII - Ghys 36. Brer Rabbit - MacDowell . 37: Novelette - MacDowell 38. Song (Six Sea Pieces) - MacDowell 39. Starlight (Six Sea Pieces) - MacDowell 40. To A Wild Rose - MacDowell 41. Witches! Dance op. 17 No. 2 - MacDowell 42. Consolation - Mendelssohn 43. Funeral March - Mendelssohn 44. Hunting Song - Mendelssohn 45. Spinning Song - Mendelssohn 46. Spring Song - Mendelssohn 47. The Brook - Mendelssohn 48. Seranata - Moskowski 49. Turkish March - Mozart . 50. First Movement Sonata in C Major - Mozart 51. Third Movement, Sonata in C Major - Mozart 52. Minuet - Paderewski 53. March of the Little Tin Soldiers - Pierne \_ 54. Dancing Doll - Poldini \_ 55. Japanese Etude - Poldini 🐇 \_ 56. Prelude in G Minor - Rachmaninoff 57. Song Without Words - Rebekoff 58. Melody in F - Rubenstein 59. Romance - Schumann 60. Contentedness - Schumann 61. Curious Story - Schumann 62. First Movement, Concerto in A Minor - Schumann 63. Knight Rupert - Schumann 64. Slumber Song - Schumann \_ 65. Soldiers' March - Schumann 66. The Wild Horseman - Schumann 67. Traumerei - Schumann 68. Profet Bird - Schumann 69. Marche Militaire - Schubert \_70. Scherzo in  $\mathbb{B}^{\flat}$  Major - Schubert \_ 71. A La Bien - Aimee - Schutt 72. Simple Aveu - Thome 73. Chanson Triste - Tschaikowsky \_ 74. June Barcarole - Tschaikowsky \_ 75. Troika - Tschaikowsky

Fifty subjects again completed the questionnaires.

The subjects selected for this experiment were all pianists or familiar with piano literature. The persons who participated in this experiment fitted the same classifications as discussed on Page 9.

A few subjects participated in all three experiments. A large number participated in two experiments according to their musical\_knowledge.

Data compiled from the experiments will be discussed in the remainder of this thesis.

#### Chapter III

#### SUMMARY OF DATA GAINED FROM THE EXPERIMENT

The data compiled from the three main experiments will be pre-

The pattern of key which resulted from the violin experiment shows that many more compositions for violin were written in sharp keys than flat keys. Forty-six of the compositions used were in the keys of from one to four sharps. Fifteen compositions were in the keys of one to two flats, while fourteen compositions were in C major or A minor.

Table I shows the per cent of total choices of key placed in each of the divisions for the piano.

Reading this table from left to right you will find:

1. The key.

2. The number of compositions.

3. The per cent of persons who placed compositions in Division I.

4. The per cent in Division II.

5. The per cent in Division III.

6. The per cent in Division IV.

7. The per cent of persons who did not answer compositions in each key.

In discussing the data, the piano experiment will be discussed first. This will be followed by a discussion of the violin and orchestra experiments because the violin is more closely integrated with the orchestra than is the piano.

- 16 -

## TABLE I

•

.

## THE PER CENT OF TOTAL CHOICES OF KEY PLACED IN EACH OF THE DIVISIONS FOR THE PIANO

Key	Number of Compositions In Each Key	I Dignified Majestic	II Lyrical Serene Restful	III Humorous Delicate Brilliant	IV Formal & Classic In Design	Unan- swered
a			,			
Eb Major	6	0	60	36	0	4
Bb Major	2	0	8	82	0	10
G Minor	3	10	31	49	0	10
F Major	2	7	93	0	0	0
D Minor	2	13	0	39	34	14
C Major	6	0	25	53	13	9
A Minor	8	7	13	60	12	8
G Major	7	11	33	37	10	9
E Minor	3	30	25	23	7	15
D Major	20	5	35	40	7	13
B Minor	3	3	29	35	19	14
A Major	7	5	40	47	1	7
E Major	6	2	40	36	13	9

Table II shows the per cent of total choices of key placed in each of the divisions for the violin. It contains the same information as was discussed before presenting Table I.

# TABLE II

## THE PER CENT OF TOTAL CHOICES OF KEY PLACED IN EACH OF THE DIVISIONS FOR THE VIOLIN

Key	Number of Compositions In Each Key	I Dignified Majestic	II Lyrical Serene Restful	III Humorous Delicate Brilliant	IV Formal & Classic In Design	Unan- swered
		·····		<u></u>		
Eb Major	6	2	40	47	1	10
Bb Major	2	0	83	4	0	13
G Minor	3	l	7	59	23	10
F Major	2	0	76	8	12	4
D Minor	2	10	0	5	77	8
C Major	6	20	56	18	3	3
A Minor	8	7	13	60	12	8
G Major	7	11	33	37	10	9
E Minor	3	4	5	80	6	5
D Major	20	7	22	52	12	7
B Minor	3	0	47	35	8	10
<b>A</b> Major	7	1	9	68	11	11
E Major	6	12	8	41	29	10

Table III shows the per cent of total choices of key placed in each of the divisions for the orchestra.

## TABLE III

## THE PER CENT OF TOTAL CHOICES OF KEY PLACED IN EACH OF THE DIVISIONS FOR THE ORCHESTRA

Key	Number of Compositions In Each Key	I Dignified Majestic	II Lyrical Serene Restful	III Humorous Delicate Brilliant	IV Formal & Classic In Design	Unan- swered
	<u> </u>	<u></u>	<del></del>	- <u></u>		
Eb Major	6	28	13	41	4	14
Bb Major	2	0	36	53	0	11
G Minor	3	10	7	47	24	12
F Major	2	45	35	7	3	10
D Minor	2	47	0	10	32	11
C Major	6	14	14	49	10	13
A Minor	8	2	17	61	2	18
G Major	7	17	23	36	10	14
E Minor	3	21	24	31	6	18
D Major	20	10	24	40	6	20
B Minor	3	6	26	45	2	21
<b>A</b> Major	7	1	32	50	2	15
E Major	6	17	53	14	2	14

•

In analyzing these charts it is seen that Eb major rates very low in Division I in piano and violin but higher in orchestra. Eb also rates very low in IV.

The key of Bb major does not appear in either Division II or IV in either Piano, Violin, or Orchestra. The piano chart rates the key of Bb very high in Division III, while the violin rates Bb very low in this division.

It is interesting to note that G minor does not appear at all in Division IV in the piano chart but rates next to highest in this division in both the violin and the orchestra experiments.

The orchestra table rates the key of F major second in Division I, but it rates very low in the piano table and does not appear in the violin table.

D minor is not found in Division II in any of the three tables.

The key of C major is another interesting key in Division I. It rates highest in violin, lowest in piano, and about middle ways in the orchestra table.

A minor and G major are consistent keys in all instruments.

E minor is consistent in the piano and orchestra tables, but varies greatly in violin where there is great concentration in Division III.

D major rates low in Division I and IV.

B minor rates very high in the Unanswered Division in all instruments.

A major is low in Division I in all experiments and rates low

- 22 -

in Division II in the violin table.

E major shows much variation in all three tables.

Table IV shows the per cent of total choices of key placed in each of the divisions for all of the instruments.

## TABLE IV

THE PER CENT OF TOTAL CHOICES OF KEY PLACED IN EACH OF THE DIVISIONS FOR ALL OF THE INSTRUMENTS

.

Key	Number of Compositions In Each Key	I Dignified Majestic	II Lyrical Serene Restful	III Humorous Delicate Brilliant	IV Formal & Classic In Design	Unan- swered
Eb Major	6	10	38	41	2	9
Bb Major	2	0	43	46	0	11
G Minor	3	7	14	52	16	11
F Major	2	17	68	5	5	5
D Minor	2	23	0	18	49	10
C Major	6	11	32	40	9	8
A Minor	8	4	10	62	12	12
G Major	7	13	34	35	8	10
E Minor	3	18	18	46	6	12
D Major	20	8	27	43	9	13
B Minor	3	3	34	38	10	15
A Major	7	2	27	55	5	11
E Major	6	10	34	30	14	12

From this table it is seen that in no key is the largest judgment to be found in Division I.

F major and E major rate higher in Division II than in any other division.

Eb major, Bb major, G minor, C major, A major, G major, E minor, D major, B minor, and A minor rate higher in Division III than in any other division.

Only D minor rates higher in Division IV than in any other division.

From this it is evident that the total of compositions placed in Division III was much greater than in any of the other divisions.

In the following discussion, the same key will appear in two different classifications if the per cent is the same.

The keys of Bb major, G minor, A minor, D major, B minor, A major, and E major rate lower in Division I than any other division.

D minor rates lowest in Division II.

F major rates its lowest in Division III.

The keys of Eb major, Bb major, F major, C major, G major, and E minor rate lower in Division IV than in any other division.

In the unanswered division, F major rates the lowest per cent while B minor rates the highest per cent. Thus, compositions in the key of B minor were the least familiar in character to the most of the subjects.

Table V shows the per cent of times that each key was placed in Division I in piano, violin, and orchestra respectively.

- 25 -

# TABLE V

. .

PIANO Key Per Cent		VIOI Kev	IN Per Cent	ORCHE	ORCHESTRA Key Ber Cont		
Eb Major	0	Eb Major	2	Eb Major	28		
Bb Major	0	Bb Major	0	Bb Major	0		
G Minor	10	G Minor	l	G Minor	10		
F Major	7	F Major	0	F Major	45		
D Minor	13	D Minor	10	D Minor	47		
C Major	0	C Major	20	C Major	14		
A Minor	7	A Minor	4	A Minor	2		
G Major	11	G Major	12	G Major	17		
E Minor	30	E Minor	4	E Minor	21		
D Major	5	D Major	7	D Major	10		
B Minor	3	B Minor	0	B Minor	6		
A Major	5	A Major	l	A Major	l		
E Major	2	E Major	12	E Major	17		

# PER CENT OF TIMES EACH KEY WAS PLACED IN DIVISION I (Dignified, Majestic)

In discussing this and the following tables, it will be noted that a key can rate from first place to thirteenth place.

If two or more keys tie for a position, both of the keys will be referred to, for example, as 4-5 or 11-12-13.

In this table it is seen that in the piano division E minor rates first; this key rates fourth in orchestra and sixth-seventh in violin.

C major rates first in violin, seventh in orchestra, and eleventh-twelfth-thirteenth in piano.

D minor rates first in orchestra, second in piano, and fourth in violin.

Thus D minor is the best key for Division I.

The keys of Eb major, Bb major, and C major rate no per cent in the piano experiment. The keys of Bb major, F major, and B minor rate no per cent in the violin experiment and Bb major rates no per cent in orchestra.

More subjects placed orchestral music in Division I than piano and violin music. Sixteen per cent of all orchestral music was placed in this division while eight per cent of the piano. music and seven per cent of the violin music is in Division I.

- 27 -

## TABLE VI

PIANO		VIOL	IN	ORCEI	ORCHESTRA		
Key	Per Cent	Key	Per Cent	Key	Per Cent		
Eb Major	60	Eb Major	40	Eb Major	13		
Bb Major	8	Bb Major	83	Bb Major	36		
G Minor	31	G Minor	7	G Minor	7		
F Major	93	F Major	76	F Major	35		
D Minor	0	D Minor	0	D Minor	0		
C Major	25	C Major	56	C Major	14		
A Minor	13	A Minor	4	A Minor	17		
G Major	33	G Major	47	G Major	23		
E Minor	25	E Minor	5	E Minor	24		
D Major	35	D Major	22	D Major	24		
B Minor	29	B Minor	47	B Minor	26		
A Major	40	<b>A</b> Major	9	A Major	32		
E Major	40	E Major	8	E Major	53		

# PER CENT OF TIMES EACH KEY WAS PLACED IN DIVISION II (Lyrical, Serene, Restful)

This table shows the per cent of times that each key was placed in Division II in the piano, violin, and orchestra experiments.

An analysis of this table shows that F major rates first in the piano experiment, second in violin, and third in orchestra.

Bb major rates first in violin, second in orchestra and twelfth in piano.

E major rates first in orchestra, third-fourth in piano, and eighth-ninth in violin.

Thus F major is the best key for Division II.

D minor rates the lowest in piano, violin, and orchestra.

Thirty-three per cent placed piano music in Division II; thirty per cent placed violin music in Division II; and twenty-three per cent of the subjects placed the orchestra music in Division II.

From this data, it is seen that more piano music was placed in Division II than violin or orchestra music.

## TABLE VII

# PER CENT OF TIMES EACH KEY WAS PLACED IN DIVISION III (Humorous, Delicate, Brilliant)

PIANO		VIOLIN		ORCHESTRA	
Key	Per Cent	Key P	er Cent	Key	Per Cent
Eb Major	36	Eb Major	47	Eb Major	41
Bb Major	82	Bb Major	4	Bb Major	53
G Minor	49	G Minor	59	G Minor	47
F Major	0	F Major	8	F Major	7
D Minor	39	D Minor	5	D Minor	10
C Major	53	C Major	18	C Major	49
A Minor	60	A Minor	63	A Minor	61
G Major	37	G Major	32	G Major	36
E Minor	23	E Minor	80	E Minor	31
D Major	40	D Major	52	D Major	40
B Minor	35	B Minor	35	B Minor	45
A Major	47	A Major	68	A Major	50
E Major	36	E Major	41	E Major	14
This table similarly shows the per cent of times each key was placed in Division III in the piano, violin, and orchestra experiments.

From this table we see that Bb major rates first in piano, second in orchestra, and thirteenth in violin.

E minor rates first in violin, tenth in orchestra, twelfth in piano.

A minor is first in orchestra, second in piano, and third in orchestra. A minor, therefore, is the best key for Division III.

F major rates lowest in both piano and violin in Division III while Bb major rates the lowest in orchestra.

Forty-one per cent of the subjects placed the piano compositions in Division III; thirty-nine per cent placed violin music in Division III, and thirty-eight per cent placed orchestral music in Division III.

The piano rates the highest per cent in Division III as it also did in Division II.

PI	7NO	VIOLI	IN	ORCHES	ORCHESTRA		
Key	Per Cent	Key H	Per Cent	Key	Per Cent		
Eb Major	0	Eb Major	l	Eb Major	4		
Bb Major	0	Bb Major	0	Bb Major	0		
G Minor	0	G Minor	23	G Minor	24		
F Major	0	F Major	12	F Major	3		
D Minor	34	D Minor	77	D Minor	32		
C Major	13	C Major	3	C Major	10		
A Minor	12	A Minor	20	A Minor	2		
G Major	10	G Major	5	G Major	10		
E Minor	7	E Minor	6	E Minor	6		
D Major	7	D Major	12	D Major	6		
B Minor	19	B Minor	8	B Minor	2		
A Major	1	A Major	11	A Major	2		
E Major	13	E Major	29	E Major	2		

### PER CENT OF TIMES EACH KEY WAS PLACED IN DIVISION IV (Formal and Classic in Design)

This table in like manner shows the per cent of times that each key was placed in Division IV in the piano, violin, and orchestra experiments.

It is interesting to note that the key of D minor rates first in piano, violin, and orchestra.

The key of F major rates lowest in piano; Bb major is lowest in both violin and orchestra in Division IV.

Division IV rated highest in the violin experiment with sixteen per cent of the compositions in that division; nine per cent of piano music and eight per cent of the orchestral music was placed in Division IV.

### TABLE IX

# FER CENT OF TIMES EACH KEY WAS PLACED IN THE UNANSWERED DIVISION

PIANO		VIOLI	N	ORCHES	TRA
Key	Fer Cent	Key P	er Cent	Key	Fer Cent
Eb Major	4	Eb Major	10	Eb Major	14
Bb Major	10	Bb Major	13	Bb Major	11
G Minor	10	G Minor	10	G Minor	12
F Major	0	F Major	4	F Major	10
D Minor	14	D Minor	8	D Minor	11
C Major	9	C Major	3	C Major	13
A Minor	8	A Minor	8	A Minor	18
G Major	9	G Major	9	G Major	14
E Minor	15	E Minor	5	E Minor	18
D Major	13	D Major	7	D Major	20
B Minor	14	B Minor	10	B Minor	21
A Major	7	A Major	11	A Major	15
E Major	9	E Major	10	E Major	14

Table IX shows the per cent of times that each key was placed in the Unanswered Division in the piano, violin, and orchestra experiments.

An analysis of this table shows that fifteen per cent of the subjects did not answer compositions in E minor, which was the highest per cent not answered in the piano division.

Bb major had the highest per cent in the violin experiment, which was thirteen per cent.

B minor rated the highest per cent in the orchestra experiment with twenty-one per cent of the subjects not answering compositions in this key.

The key of F major rates lowest in the piano experiment of the unanswered division. C major rated the lowest per cent in the violin, and Bb major and D minor rated lowest in the orchestral experiment.

In previous tables it was found that the key of D minor rated first in both Divisions I and IV. In the Unanswered Division it rates seventh when all instruments are totaled.

F major appeared as the best key in Division II and it totals thirteenth (lowest) in the Unanswered Division.

A minor rated highest in Division III and, like D minor, it totals seventh in the Unanswered Division.

From this, we see that fewer subjects were unable to respond to the key of F major than to any other key.

Fifteen per cent of the orchestral compositions found their way into the Unanswered Division; nine per cent of piano compositions

- 35 -

were unanswered; and only eight per cent of violin were placed in this division.

One reason that the violin has the lowest per cent of unanswered compositions is because a larger proportion of the subjects selected for this experiment had more extensive training and experience.

It is significant to note that ten per cent of subjects placed compositions in Division I.

Twenty-nine per cent of all compositions fell into Division II.

Thirty-nine per cent of all compositions were placed in Division III, which is the highest per cent.

Eleven per cent of compositions were in Division IV and eleven per cent of all compositions were unanswered.

These per cents show that more subjects classified their compositions in Division III than in any other division and fewer subjects classified their compositions in Division I than in any other division. In order to approach the subject in a different way, the following tables have been prepared.

Tables X, XI, XII, and XIII show the per cent of choices placed in each division in each key.

Reading the tables from left to right you will find:

1. The key.

2. The number of compositions in that key.

3. The per cent of that key in the piano experiment.

4. The per cent of that key in the violin experiment.

5. The per cent of that key in the orchestral experiment.

6. The average of the total.

# TABLE X

Key	Number of Compositions In Each Key	Piano	Violin	Orchestra	Total
Eb Major	6	0	3	32	11
Bb Major	2	0	0	0	0
G Minor	3	11	2	11	8
F Major	2	7	0	50	18
D Minor	2	15	11	53	26
C Major	6	0	21	16	12
A Minor	8	7	4	2	5
G Major	7	11	12	19	14
E Minor	3	35	4	26	21
D Major	20	6	8	14	9
B Minor	3	4	0	8	4
A Major	7	6	l	l	3
E Major	6	3	14	20	12

# PER CENT OF CHOICES PLACED IN DIVISION I (Dignified, Majestic)

- 38 -

•

## TABLE XI

	1				
، Key	Number of Compositions In	Piano	Violin	Orchestra	Total
	Each Key				
			· .		
Eb Major	6	62	444	15	41
Bb Major	2	10	95	40	48
G Minor	3	34	7	8	16
F Major	2	93	80	38	71
D Minor	2	0	, 0	0	0
C Major	6	28	58	16	35
A Minor	8	14	5	21	13
G Major	7	37	49	27	38
E Minor	3	29	6	29	20
D Major	20	40	23	29	31
B Minor	3	34	53	34	40
A Major	7	43	11	38	30
E Major	6	44	9	62	38

# PER CENT OF CHOICES PLACED IN DIVISION II (Lyrical, Serene, Restful)

- 39 -

### TABLE XII

Key	Number of Compositions In Each Key	Piano	Violin	Orchestra	Total
Eb Major	6	38	51	48	46
Bb Major	2	90	5	60	52
G Minor	3	55	65	53	58
F Major	2	0	8	9,	6
D Minor	2	45	5	11	20
C Major	6	56	18	56	43
A Minor	8	65	69	74	69
G Major	7	41	33	42	39
E Minor	3	28	84	37	51
D Major	20	46	56	50	51
B Minor	3	40	38	56	45
A Major	7	50	76	59	62
E Major	6	39	46	16	34

### PER CENT OF CHOICES PLACED IN DIVISION III (Humorous, Delicate, Brilliant)

•

.

### PER CENT OF CHOICES PLACED IN DIVISION IV (Formal and Classic In Design)

Key	Number of Compositions In Each Key	Piano	Violin	Orchestra	Total
Eb Major	6	0	2	5	2
Bb Major	2	0	0	0	0
G Minor	3	0	26	28	18
F Major	2	0	12	3	5
D Minor	2	40	84	36	54
C Major	6	16	3	12	10
A Minor	8	14	22	3	13
G Major	7	11	6	12	9
E Minor	3	8	6	8	8
D Major	20	8	13	7	9
B Minor	3	22	9	2	11
A Major	7	1	13	2	5
E Major	6	14	31	2	16

.

In order to ascertain the per cent of the total choices for each key, the compositions which were not answered were subtracted from the data when figuring the per cent.

It was seen previously that D minor rated highest in Divisions I and IV; F major rated highest in Division II, and A minor rated highest in Division III.

Table XIV shows the rating of these keys in the other divisions.

#### TABLE XIV

#### THE PLACE OF THE THREE KEYS DETERMINED BY PER CENT OF CHOICES IN EACH OF THE FOUR DIVISIONS

Key	I	II	III	IV
D Minor	1	13	12	1
F Major	3	l	13	10-11
A Minor	8 <b>-9</b>	12	1	4

This analysis shows that these keys which rate highest in one or more classifications also rate very low in one or more classifications.

Table XV shows the keys arranged in the order of their highest per cents when piano, violin and orchestra are all considered.

- 42 -

# TABLE XV

THE KEYS ARRANGED IN THE ORDER OF THEIR HIGHEST PER CENT OF CHOICES IN THE TOTAL OF THE THREE EXPERIMENTS

DIVISI( Key Pe	ON I er Cent	DIVISIC Key Pe	DN II er Cent	DIVISION Key Pe	III r Cent	DIV Key	ISION I <b>V</b> Fer Cent
D Minor	26	F Major	71	A Minor	69	D Mino	r 54
E Minor	21	Bb Major	48	A Major	62	G Mino	r 18
F Major	18	Eb Major	41	G Minor	58	E Majo	r 16
G Major	14	B Minor	40	Bb Major	52	A Mino	r 13
C Major	12	G Major	38	E Minor	51	B Mino	r ll
E Major	12	E Major	38	D Major	51	C Majo	<b>r 1</b> 0
Eb Major	11	C Major	35	Eb Major	46	G Majo	or 9
D Major	9	D Major	31	B Minor	45	D Majo	or 9
A Minor	9	A Major	30	C Major	43	E Minc	<b>r</b> 8
G Minor	8	E Minor	20	G Major	39	F Majo	<b>r</b> 5
B Minor	4	G Minor	16	E Major	34	A Majo	o <b>r</b> 5
A Major	3	A Minor	13	D Minor	20	Eb Maj	or 2
Bb Major	0	D Minor	0	F Major	6	Bb Maj	ior O

Table XVI shows the place of each key, determined by the per cent of choices in each of the four divisions.

Some keys are consistent in their distribution among the divisions.

D Major is the most evenly distributed of all of the keys; G major and C major are also quite consistent.

This indicates that mood effects some keys more strongly than others.

### TABLE XVI

Ξ¢-

Кеу	I	II	III	IV
Eb Major	5-6	3	7	12
Bb Major	13	2	4	13
G Minor	10	11	3	2
F Major	3	l	13	10-11
D Minor	l	13	12	l
C Major	5 <b>-</b> 6	7	9	6
A Minor	8-9	12	l	4
G. Major	4	5-6	10	7-8
E Minor	2	10	5-6	9
D Major	8–9	8	5-6	7-8
B Minor	11	4	8	5
A Major	12	9	2	11
E Major	5-6	5-6	12	3

# THE PLACE (DETERMINED BY PER CENT OF CHOICE) OF EACH KEY IN EACH OF THE FOUR DIVISIONS

,

Table XVII shows the per cent of each of the four divisions in each key for the three experiments.

This chart shows a complete analysis of each key. The divisions are arranged in order of their highest per cent in the column of totals.

From this table of totals it is seen that Division rates highest in F major and E Major.

Most keys rated highest in Division III. The keys were Eb major, Bb major, G minor, C major, A minor, G major, E minor, D major, B minor and A major.

Division IV rates highest in the key of D minor.

PER CENT OF CHOICES IN EACH KEY PLACED IN DIVISIONS I, II, III, IV

Key	Number of Compositions In Each Key	Divisions	Piano	Violin	Orchestra	.Total
Eb Major	6	III II I IV	38 62 0 0	51 44 3 2	48 15 32 5	46 41 11 2
Bb Major	2	III II I IV	90 10 0	5 95 0 0	60 40 0 0	52 48 0 0
G Minor	3	III IV II I	55 0 34 11	65 26 7 2	53 28 8 11	58 18 16 8
F Major	2	II I III IV	93 7 0	80 0 8 12	38 50 9 3	71 18 6 5
D Minor	2	IV I III II	40 15 45 0	84 11 5 0	36 53 11 0	54 26 20 0
C Major	6	III II I IV	56 28 0 16	18 58 21 3	56 16 16 12	43 35 12 10
A Minor	8	III II IV I	65 14 14 7	69 5 22 4	74 21 3 2	69 13 13 5
G Major	7	III II I	41 37 11	33 49 12	42 27 19	39 38 14

•

# (Continued)

Key	Number of Compositions In Each Key	Divisions	Piano	Violin	Orchestra	Total
E Minor	3	III I II IV	28 35 29 8	84 4 6 6	37 26 29 8	51 21 20 8
D Major	20	III II IV	46 40 6 8	56 23 8 13	50 29 14 7	51 31 9 9
B Minor	3	III II IV I	40 34 22 4	38 53 9 0	56 34 2 8	45 40 11 4
A Major	7	III II IV I	50 43 1 6	76 11 13 1	59 38 2 1	62 30 5 3
E Major	6	II III IV I	44 39 14 3	9 46 31 14	62 16 2 20	38 34 16 12

#### Chapter IV

#### SIGNIFICANCE OF DATA REGARDING KEY

The conclusions discussed in this chapter are drawn from the tables presented in the preceding chapter. In this chapter the key differences will be discussed.

All of the compositions used in the three experiments received a fifty per cent or above agreement in the mood classification. Therefore, music does produce a uniform mood response to many people.

The four mood divisions used seemed to be adequate to enable the subjects to classify adequately the compositions. If fewer divisions had been used, there would have been a more concentrated result, and if more moods had been used, there would have been a less concentrated result.

In each of the three experiments, more subjects classified compositions into Division III than into any other division. Perhaps in another experiment, Division III might be subdivided.

Fewer subjects classified compositions into Division I than into any other division. Since every effort was made to secure compositions of all moods, this indicates that music which is dignified and majestic is rather rare. Per haps this is representative of music in general.

All thirteen keys rated a higher per cent in the other divisions than in Division I, and all keys except one rated higher in Divisions II and III than in Division IV. Furthermore, the classifications which attracted fewer choices also had a less variety of keys represented.

- 49 -

The key of D minor rated highest in both Divisions I and IV; F major rated highest in Division II; and A minor rated highest in Division III. Therefore, the keys which rated first were in the keys of one flat or no flats or sharps. The most uniform response was from keys with few sharps or flats in the signature.

Division I had the smallest spread of key of the four divisions. The top three keys in that division ranged from one flat to one sharp.

The three top key choices for Division II were all flat keys. These keys ranged from one to three flats.

Division III had a spread in its top three keys of from two flats to three sharps. Thus, Division III, which is the largest division, also shows more diversity of key.

The widest key spread in the top three keys was in Division IV. These keys ranged from two flats to four sharps.

Therefore it is apparent that fewer sharps or flats tend to give a majestic feeling and that composers wishing to express this mood use these keys.

Flat keys are the best for compositions which are lyrical, serene, and restful.

We find more diversity of key in compositions which are humorous, delicate or brilliant in character.

The most diversity of key is found in compositions which are formal and classic in design. Thus, composers writing in this style give little thought to the key of their compositions.

In the three top keys of Divisions I, III, and IV, two of the

- 50 -

keys were minor and one was major. Therefore the minor mode is not a determining factor in mood classification.

The top keys in Division II are all major. The minor keys rate very low. Therefore it is logical to assume that music which is lyrical, serene, or restful is not as affective in minor as in the major mode.

Keys which rated highest in one or more divisions also rated very low in one or more divisions. Thus these keys do show mood tendencies. In this group were:

Bb major
G minor
F major
D minor
A minor
A major
E major

Other keys were very consistent in their distribution and showed no significant mood tendency. In this group were:

- Eb major
- C major
- D major
- B minor

#### Chapter V

### CHARACTERISTICS OF THE MUSIC OTHER THAN KEY WHICH DETERMINED THE CLASSIFICATION

No one would think that key was the only factor which influenced the classification of the compositions. The results suggest many other factors.

For example, some of the factors which are outstanding in compositions classified as dignified and majestic (Division I) are as follows:

The melodic line is generally of a singable character. The melody is often of a rather low pitch and the melodic line is often ascending in character. It generally does not have an extremely wide range.

Rhythm in this division contains a firm, precise, and often heavy accent which give the numbers the stability and dignity which they contain.

£ \_

The harmonic progressions in compositions of this division are generally of a conservative and often rather simple nature.

Polyphony is very evident in many of these compositions but almost totally absent in others. Strict imitation gives many of the compositions a part of the dignity which they possess.

The tempo in selections of this division is usually of a slow, deliberate, and stately character.

Dynamics vary in these compositions. Most of these compositions are rather loud in character to add to a mood of depth and fullness.

- 52 -

Full orchestration but no unusual devices is evident in compositions of this division. When the music is triumphant in character, the brass section is often outstanding.

The style and variety of bowing is very important to mood classification. Some bowings most common to this division are:

1. Detache -- a detached stroke of the bow.

2. Grand Datache -- broad, sweeping, detached stroke.

3. Martelė -- hammered, detached stroke.

4. Slurred -- two or more notes played on one bow.

Similarly in the compositions classified as lyrical, serene, and restful (Division II) some of the outstanding factors are:

The melodic line is singable in character. The melody has neither an extremely wide range nor many wide skips.

Rhythm patterns in compositions of Division II are often of a complicated character. However, the difficult patterns sound smooth and help to establish the flowing character of compositions of this division. Heavy accents are generally avoided in these compositions.

The harmonic progressions of this division are usually rather complex in character. In compositions of a later period, more unusual harmonies are evident.

Polyphony varies greatly in amount in compositions of this division.

The tempo is moderate in character.

There is usually little dynamic contrast in compositions which are lyrical, etc. The dynamics are primarily of a soft and rather sub-

- 53 -

dued character.

Orchestration of these compositions generally does not include an abundance of brass or other heavy instruments. The string and woodwind sections of the orchestra are very prominent in compositions of this division.

Bowings most common to this division are:

1. Legato -- singing stroke without any audible break in the flow of tone.

2. Slurred -- two or more notes to one bow.

3. Portato -- several notes to one bow with each note gently divided.

Division III (humorous, delicate, and brilliant), which embraced the largest per cent of the compositions has some outstanding factors.

The melody is of a less singable nature. To a large degree, the melodic line is often woven from scale, chord, or arpeggio figures. It also covers a much wider range than found in the previous divisions.

The rhythm of this division often contains similar patterns and has an abundance of sixteenth notes. It also has many dotted figures and uneven rhythms, but these flow easily and the rhythm patterns of this division aid in the execution of the technical difficulties.

Harmony, polyphony, and dynamics vary greatly in compositions of this division and thus are not constant or determining factors.

Tempo is an important factor. Compositions of this division

- 54 -

generally have a rapid tempo.

This music generally makes heavy demands upon the technical equipment of the performer. Often technic is used to show sheer virtu-osity.

Almost all of the instruments of the orchestra are used in compositions of this division. Unusual orchestral effects, such as harmonics and pizzicato in the violin, are often used.

Many unusual bow effects often appear in compositions which are humorous, delicate, or brilliant.

Among the standard bowings common to this division are:

1. Detache -- detached stroke of the bow, often rapid in character.

2. Staccato -- an abrupt stop of the bow.

3. Down bow staccato.

4. Up bow staccato.

5. Spiccato -- bouncing, springing bow.

6. Saltando or saltato -- a free rebound of the bow. This is often referred to as a thrown bow, especially when passing over several strings in rapid succession.

Fewer factors were as decided in the fourth division, which was formal and classic in design as were discussed in the three preceding divisions.

The melodic line of compositions in this division is less singable than Divisions I and II. The melody is generally made up of

- 55 -

small figures or motives which are woven and developed in the formal style.

These motives are generally counterpuntal in character and often derived from the scale or chord line.

The complexity of the rhythm patterns differ in these compositions. Rhythmic figures and motives, like the melodic figures and motives, aid in the development of the form of these compositions.

In earlier works of this division, the harmony is generally of a simple nature. In works of the later periods it becomes more complex.

Polyphony is an outstanding factor in this division. Most of the compositions are polyphonic in character. Strict imitation establishes the form as a whole.

Tempo, dynamics, and orchestration vary in compositions of this division and thus show no central tendencies to be determining factors.

These compositions are usually technically difficult to execute because of the precise interpretation which they demand. Thus, they make heavy technical demands upon the performer, but technic is not used as an end in itself but as a means to a more artistic interpretation of the composition.

More conservative bowings are used in compositions of this division. Leading the list are:

1. Detache -- detached stroke of the bow.

2. Martele -- hammered, detached stroke.

- 56 -

#### Chapter VI

#### GENERAL SUMMARY

Although this experiment was planned to discover the effect of key upon mood in music, actually much more information was gained regarding other factors which influenced the listener.

So far as key is concerned it was found that:

1. Some keys showed mood tendency while other keys showed no significant results.

2. The keys which rated highest in the four divisions were: D minor -- Division I, Dignified, Majestic Division IV, Formal and Classic in Design.

F major -- Division II, Lyrical, Serene, Restful.

A minor -- Division III, Humorous, Delicate, Brilliant.

3. Key tendency of compositions which were dignified and majestic was towards fewer sharps or flats in the signature.

4. Key tendency of compositions which were lyrical, serene, and restful was towards flats in the signature.

5. Compositions which were humorous, delicate, and brilliant showed more diversity of key than was found in the previous two divisions.

6. The greatest diversity of key was found in compositions which were classified as formal and classic in design.

7. Minor keys rated high in Divisions I, III, and IV but rated very low in Division II. Thus mode seems of little significance in determining mood.

Characteristics of music other than key were found to be

- 57 -

more important factors in determining the classification of the compositions. These factors were:

- 1. Tempo.
- 2. Melody.
- 3. Rhythm.
- 4. Harmony.
- 5. Folyphony.
- 6. Orchestration.
- 7. Bowing.
- 8. Technic.
- 9. Dynamics.

Similar experimentation with some of the factors mentioned above should bring forth interesting and valuable data.

Special compositions could be selected to show a more direct relation of key to mood, but I feel that another impartial experiment would bring substantially the same results as in this study.

#### APPENDIX

The following tables show the complete analysis of the classification of each composition in each of the three experiments.

The compositions are arranged in the order of the highest per cent of agreement in the division of their first choice.

Reading these tables from left to right you will find:

1. The key of the composition. Major keys will be indicated by a capital letter and minor keys will be indicated by small letters.

2. The name of the composition.

3. The composer.

4. The division into which the highest per cent of the subjects classified the composition.

5. The per cent of the subjects who placed the composition into the division of the first choice.

6. The division which rated the second choice.

7. The per cent of the subjects who placed the compositions into the division of the second choice.

8. The division which rated the third choice.

9. The per cent of the subjects who placed the compositions into the division of the third choice.

10. The division which rated the fourth choice.

11. The per cent of the subjects who placed the compositions into the divisions of the fourth choice.

12. The per cent of the subjects who did not answer the compositions.

### ANALYSIS OF THE CLASSIFICATION OF THE PIANO COMPOSITIONS

	Key			] <u>Cho</u> DIV	st bice	2 <u>Cho</u> DIV	ice	31 <u>Choi</u> DIV	rd ice	4th <u>Choice</u> DIV. %	Unan- swered
ı	Ĕb	Slumber Song	Schumann	2	100						
2	D	Dancing Doll	Poldini	3	98	2	2				
3	Eb	Country Gardens	Grainger	3	98	2	2				
4	A	To A Wild Rose	MacDowell	2	96	3	4				
5	с	Spinning Song	Mendelssohn	3	94	2	6				
6	F	Melody in F	Rubinstei <b>n</b>	2	94	1	6				
7	a	The Wild Horse- mann	Schumann	3	94	l	2				4
8	F	Traumerei	Schumann	2	92	l	8				
9	A	Spring Song	Mendelssohn	2	86	3	12				2
10	G	Minuet	Paderewski	3	86	2	14				
11	Eb	Romance	Schumann	2	86	3	8				6
12	A	Starlight (Sea Pieces)	MacDowell	2	84	3	4				12
13	A	Butterfly	Grieg	3	84	2	6				10
14	E	Consolation	Mendelssohn	2	84	3	4	l	2		10
15	D	Simple Aveu	Thome	2	84	3	4				12
16	E	Troika	Tschaikowsky	3	84	1	6	2	4		6
17	Βъ	March of the Little Tin Soldiers	Pierne	3	82	2	10				8
18	D	Contentedness	Schumann	2	82	3	6				12
19	ВЪ	Scherzo in Bb Major	Schubert	3	82	2	6				12

(Continued)

Key				l <u>Chc</u> DIV	lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		rd ice	4th <u>Choice</u> DIV. %	Unan- swered %	
20	D	Aba-Bien-Aimee	Schutt	2	82	3	8				10	
21	D	Fugue in D Major (WTC)	Bach	4	82	3	8	1	2		8	
22	A	Japanese Etude	Poldini	3	82	2	4	4	4		10	
23	G	Minuet in G	Beethoven	2	80	3	20					
24	E	Amaryllis	Louis XIII- Ghys	3	80	2	10	4	2		8	
25	Eb	Nocturne in Eb Major, Op. 9	Chopin	2	80	3	14				6	
26	Ъ	Witches' Dance	MacDowell	3	80	4	4	2	2		14	
27	a	Fur Elise	Beethoven	2	80	3	12	4	2		6	
28	D	Song Without Words	Rebekoff	2	80	3	4	4	2		14	
29	D	Curious Story	Schumann	3	80	2	12				8	
30	à	Knight Rupert	Schumann	3	80	l	14				6	
31	g	Chanson Triste	Tschaikowsky	2	80	3	10	l	2		8	
32	Ъ	Tune Barcarole	Tschaikowsky	2	80	3	10	1	2		8	
33	a	Valse Bril- lante, Op. 34	Chopin	3	<b>7</b> 8	2	6				16	
34	D	Serenata	Moskowski	2	78	3	6				16	
35	Еb	Grande Valse Brillante, Op. 18	Chopin	3	76	2	12				12	
36	е	Funeral March	Mendelssohn	l	76	4	16				8	

.

# (Continued)

Key			lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		4th <u>Choice</u> DIV. %		Unan- swered %	
37 a	Concerto A Min- or, 1st Movt.	Schumann	3	76	2	14	4	2			8	
38 D	Tango in D	Albeniz	3	74	2	8	4	2			16	
39 E	Nocturne Etude E Major, Op.10	Cho <u>p</u> in	2	74	3	8	4	4			14	
40 <b>G</b>	The Last Spring	Grieg	2	74	3	14					12	
41 a	Prelude & Fugue in A Minor	Bach	4	72	1	10	3	6			12	
42 G	Second Arabesque	Debussy	3	72	2	6	4	2			20	
43 D	Brer Rabbit	MacDowell	3	72	2	10	4	2			16	
44 D	Song (Sea Pieces)	MacDowell	2	72	3	14					14	
45 <b>A</b>	Hunting Song	Mendelssohn	3	72	1	6	2	4			18	
46 D	The Brook	Mendelssohn	2	72	3	14					14	
47 C	Sonata in C Ma- jor, 3rd Movt.	Mozart	3	72	4	14					14	
48 <b>G</b>	Soldiers March	Schumenn	l	72	3	20	4	2			6	
49 D	Marche Militaire	Schubert	3	72	1	26					2	
50 C	Prelude No. l, C Major (WTC)	Bach	2	10	4	20	3	2			8	
51 D	Les Sylvians	Chaminade	3	70	2	10	l	2			18	
52 <b>A</b>	Polonaise Mili- taire	Chopin	3	70	l	30						
53 E	The Harmonious Blacksmith	Handel	4	70	3	16	2	10	1	2	2	

(Continued)

Key			lst 2nd Choice Choice C DIV. % DIV. % I		3 <u>Cho</u> DIV	3rd <u>Choice</u> DIV. %		th ice	Unan- <u>swered</u>		
54 a	Turkish March	Mozart	3	70	4	16	l	8			6
55 E	Profet Bird	Schumann	3	70	2	12					18
56 C	Invention No. 1, C Major	Bach	3	68	4	20					12
57 D	Novelette	MacDowell	3	68	2	10					22
58 C	Sonata in C Ma- jor, 1st Movt.	Mozart	3	68	4	16	2	8			8
59 D	Prelude in D Ma- jor (WTC)	Bach	1	66	4	16	3	12	2	2	4
60 a	Concerto in A Minor, 1st Mov	Grieg t.	3	66	1	18	4	8	2	2	6
61 e	Elfin Dance	Grieg	3	66	2	10	4	6	l	2	16
62 C	Nocturne, No. 4	Grieg	2.	66	3	12	4	8			14
63 g	Frelude in G Minor	Rachmaninoff	3	66	1	14					6
64 e	Prelude in E Mi- nor, Cp. 28	Chopin	2	64	1	12	3	4			20
65 D	Gavotte	Gossec	3	64	4	16	2	2			18
66 đ	Funeral March of Marionette	Gounod	3	64	1	14	4	8			14
67 <b>G</b>	Gypsy Rondo	Haydn	4	64	3	18	2	4	l	2	12
68 D	Sonata Op. 2 2nd Movt.	Beethoven	2	62	l	12	3	8	4	4	14
69 D	Sonata, Op. 10 lst Movt.	Beethoven	3	62	2	12	4	8			18

# (Continued)

Key				l <u>Cho</u> DIV	lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		h .ce	Unan- swered %	
70	đ.	Chromatic Fan- tasy & Fugue	Bach	4	60	3	14	1	12			14	
71	Еþ	Fantasia Sonata Op. 22, lst Movt.	Beethoven	3	60	2	16	4	6			18	
72	E	The White Pea- cock	Griffes	2	60	3	20	1	4			16	
73	D	Ondine	Debussy	3	54	2	12	4	8			26	
74	Ъ	Prelude, Chor- ale, Fugue	Franck	4	54	3	16	1	8	2	6	16	
75	G	Minstrels	Debussy	2	52	3	26					22	

.

### TABLE XIX

### ANALYSIS OF THE CLASSIFICATION OF THE VIOLIN COMPOSITIONS

]	۲ey			l <u>Cho</u> DIV	st ice	2 <u>Cho</u> DIV	nd ice . %	3rd <u>Choic</u> DIV.	e P	4th <u>Choice</u> DIV. %	Unan- swered
1	D	Concerto in D Minor, 3rd Mowt.	Wieniawski	3	100						
2	ЕЪ	Hora Staccato	Heifetz	3	98	4	2				
3	a	Spanish Dance No. 1	DeFalla- Kreisler	3	94	4	2				4
4	E	Concerto in E Minor, 3rd Movt.	Mendelssohn	3	94	4	4				2
5	e	The Bee	Francois Schubert	3	94	2	2				4
6	A	Polonaise Bril- liante No. 2	Wieniawski	3	94						6
7	A	Tarentelle	Vieuxtemps	3	92	4	2				6
8	C	Moto Perpetuo	Paganini	3	92	4	4				4
9	C	The Old Refrain	Kreisler	2	92	3	4	4	2		2
10	g	Tambourin Chin- ois	Kreisler	3	90	2	4				6
11	a	Gypsy Airs	Sarasate	3	90	1	4	2	2		4
12	£	Scherzo-Taren- telle	Wieniawski	3	88	4	6	2	4		2
13	Βъ	Concerto in D Minor, 2nd Movt.	Wieniawski	2	88	3	6				6
14	A	Rondo Cappric- ioso	Saint-Saens	3	.88						12
15	D	Dancing Doll	Poldini	3	88	2	10				2

# TABLE XIX

(Continued)

]	Key				lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		e Ø	Unan- swered	
16	D	Allegro Bril- liant	Hare	3	86	1	2					12	
17	Ер	Zephyr	Hubay	3	86	2	2					12	
18	G	The Swan	Saint-Saens	2	86	3	6	4	2			6	
19	D	Witches' Dance	Paganini	3	84	4	2					14	
20	a	Caprice in A Minor	Paganini	3	84	4	4					12	
21	F	Romance in F	Beethoven	2	84	4	10					6	
22	D	On Wings of Song	Mendelssohn	2	84	3	16						
23	G	Romance in G	Beethoven	2	82	4	8					10	
24	D	Meditation (Thais)	Massenet	2	82	1	18						
25	Ъ	La Campanella	Paganini	3	82	2	4					14	
26	D	Concerto in D Major, 3rd Movt.	Tschiakowsky	3	82	1	4					14	
27	C	Prize Song (Die Meistersinger)	Wagner- Wilhelm	2	82	3	10	1	6			2	
28	D	Concerto in D Major, 3rd Movt.	Beethoven	3	8 <b>0</b>	2	8	1	2			10	
29	D	Concerto in D Major, 3rd Movt.	Brahms	3	80	4	10	<b>ב</b>	4			6	
30	Eb	Concerto in G Minor, 2nd Movt.	Bruch	2	80	1	8	3	4	4	2	6	
(Continued)

P	Cey			lst <u>Choice</u> DIV. %		2: <u>Cho</u> DIV	nd ice . %	3rd <u>Choice</u> DIV. %		4th <u>Choice</u> DIV. %		Unan- swered	
31	e	Spanish Dance	Granados- Kreisler	3	80	2	14	1	2			4	
32	E	Heire Kati Part II	Hubay	3	80	2	6					14	
33	A	I Palpiti	Rossini- Paganini	3	80	4	2					18	
34	D	Andante Canta- bile (Quartet)	Tschaikowsky	2	80	3	8	1	6	4	4	2	
35	a	Caprice in A Minor	Wieniawski	3	80	2	6	4	2			12	
36	đ	Chaconne (Sona- ta in D Minor)	Bach	4	78	l	12					10	
37	Ер	Poeme	Chausson	2	78	3	6	l	4			12	
38	G	Schon Rosemarie	Kreisler	3	78	2	20					2	
39	D	Symphonie Espag- nole, 5th Mvt.	Lalo	3	78	2	6	l	4	4	l	10	
40	D	Concerto in D Major, 3rd Movt.	Mozart	3	78	4	10					12	
41	ВЪ	Concerto in D Minor, 2nd Movt.	Sibelius	2	78	3	2					20	
42	A	Zepadeado (Shoe- maker Dance)	Sarasate	3	<b>7</b> 8	2	4	1	2			16	
43	đ	La Folia	Corelli	4	76	3	10	1	8			6	
44	G	Humoresque	Dvorak	3	76	2	24						
45	D	From the Cane- break	Gardner	3	76	2	8	4	4			12	

1

Key			l <u>Cho</u> DIV	lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		th ice	Unan- <u>swered</u> %	
46 C	Concerto in E Minor, 2nd Movt.	Mendelssohn	2	76	l	10	4	6			8	
47 <b>A</b>	Fugue in <b>A</b> Major	Tartini- Kreisler	4	74	3	8	1	4			14	
48 G	Pavane	Ravel	2	74	l	10	3	4	4	2	10	
49 Ъ	Caprice Viennois	Kreisler	2	74	3	20					6	
50 E	Sonata No. VI, E Major, 1st Movt.	Handel	4	74	l	6	3	4	2	2	14	
51 D	Valse-Bluette	Drigo-Auer	3	74	2	24					2	
52 C	Air For The G String	Bach	1	72	2	22	4	6				
53 E	Prelude in E (Sonata VI)	Bach	4	72	2	18	1	2			8	
54 D	Souvenir	Drdla	3	72	2	28						
55 D	Sonata No. IV D Major, 1st Movt.	Handel	4	72	1	16	2	2			10	
56 D	Cavatina	Raff	2	72	l	16	4	4	3	2	6	
57 A	Caprice in Eb Major	Wieniawski	3	72	2	14	1	2			12	
58 a	Concerto in A Minor, 3rd Movt.	Vivaldi	3	70	4	14	2	4	1	2	10	
59 <b>G</b>	Largo	Handel	l	70	4	16	2	14				
60 E	Gavotte and Ron- do (Sonata VI)	Bach	3	70	4	18	2	6			6	

ļ

	Key		:		lst <u>Choice</u> DIV. %		2nd Choice DIV. %		3rd <u>Choice</u> DIV. %		th ice	Unan- <u>swered</u> %	
61	F	Sonata in F lst Movt.	Beethoven	2	68	3	16	4	14			2	
62	D	Sonata No. IV D Major, 2nd Movt.	Handel	4	68	1	10	2	8	3	6	8	
63	Eb	Rondino (Theme Beethoven)	Kreisler	2	68	3	14	4	4			14	
64	C	Ave Maria	Schubert- Wilhelm	2	68	1	32						
65	a	Concerto in A Minor, 1st Movt.	Viotti	4	68	1	10	3	8	2	2	12	
66	e	Praeludium and Allegro	Kreisler	3	66	4	18	1	8			8	
67	E	Hejre Kati, Part I	Hubay	1	66	2	16	4	2			16	
68	a	Concerto in A Minor, 1st Movt.	Vivaldi	4	62	3	14	1	12			12	
69	g	Chaconne	Vitali	4	62	3	12	2	10			16	
70	Ъ	Sonata No. IV, D Major, 3rd Movt.	Handel	2	62	4	26	3	2			10	
71	a	La Cinquantaine	Gabriel-Marie	3	62	2	76	4	12			10	
72	A	Minuet	Boccherini	2	62	3	34	4	2			2	
73	D	Frasquita Sera-	Lehar-Kreisler	2	60	3	34	4	2			4	
74	G	Minuet	Faderewski- Kreisler	3	60	2	30	4	8			2	
75	D	Adoration	Borowski	1	58	2	42						

#### ANALYSIS OF THE CLASSIFICATION OF THE ORCHESTRA COMPOSITIONS

]	Key			l <u>Cho</u> DIV	st bice	2 <u>Cho</u> DIV	nd ice	3rd <u>Choice</u> DIV. 9	4th <u>Choice</u> DIV. %	Unan- swered
l	Eb	Pizzicato Polka (Sylvia)	Delibes	3	100					
2	Bb	Scherzo (Midsum- mer Night's Dream)	Mendelssohn	3	100					
3	a	Flight of the Bumble Bee	Rimsky- Korsako <b>v</b>	3	98	4	2			
4	A	Prelude to "Carmen"	Bizet	3	94	2	2			4
5	С	Bolero	Ravel	3	92	4	2			6
6	D	Overture "Mar- riage of Fi- garo"	Mozart	3	92	4	4			4
7	Еb	Coronation March (La Profete)	Megerbeer	1	90	4	4			6
8	E	Salut D'Amour	Elgar	2	90	l	2			8
9	F	War March of the Priests	Mendelssohn	1	90	4	6			4
10	a	Morris Dance (Henry VIII)	German	3	82					18
11	D	Symphony No. 5 2nd Movt.	Tschaikowsky	2	82					18
12	A	Skater's Waltz	Waldtenfel	2	82	3	10			8
13	E	Overture to "Tan hauser"	n- Wagner	1	82	4	12	3	2	4
14	A	Roman Carnival Overture	Berlioz	3	80	2	6	4	4	10

TAB	LE	XX
		Contraction of the local division of the loc

(Continued)

Key					lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		d .ce	4th <u>Choice</u> DIV. %	Unan- <u>swered</u> %	
15	A	Carneval Over- ture	Dvorak	3	80	2	4				16	
16	D	Fomp and Circum- stance No. 1	Elgar	l	80	3	14	2.	2		4	
17	a	Russian Sailors' Dance (Red Poppy)	Gliere	3	80	1	4				16	
18	E	Morning (Peer Gynt No. 1)	Grieg	2	80	3	6				14	
19	a	Anita's Dance (Peer Gynt No. 1)	Grieg	3	80	2	8				12	
20	D	Overture "Don Giovanni"	Mozart	3	80	4	6	1	2		12	
21	G	Argonaise (Le Cid)	Massenet	3	76	2	4				20	
22	D	Invitation to the Dance	Von Weber	3	76	2	16				8	
23	G	March (Nut- cracker Suite)	Tschaikowsky	3	74	1	12	4	4		10	
24	е	Dance of the Candy Fairy	<b>Tsc</b> haikowsky	3	74	2	12				14	
25	E	Forest Murmurs (Siegfried)	Wagner	2	74	3	14				12	
26	G	Young Prince and Princess	Rimsky- Korsakov	2	74	3	8	4	2		16	
27	Βъ	Waltz (Sleep- ing Beauty	Tschaikowsky	2	72	3	6				22	

Кеу				lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		4th <u>Choice</u> DIV. %	Unan- <u>swered</u>	
28 1	D	Dance of the Militron Flutes	Tschaikowsky s	3	72	2	8	4	2		18	
29 (	0	Artists' Life Waltz	Strauss	3	72	2	18				10	
30 1	b	Symphony No. 8, lst Movt.	Schubert	2	72	4	6	3	4		18	
31 🧯	7	Fugue in G Mi- nor (Little)	Bach	4	70	l	14	3	12		4	
32 I	?	Symphony No. 6 lst Movt.	Beethoven	2	70	3	14				16	
3 <b>3 I</b>	כ	Valse Lente (Ballet Sylvia)	Delibes )	2	70	3	8	1	2		20	
34 0	}	Serenade (Eine Kleine Nacht- musik)	Mozart	2	70	3	6	1	2		22	
35 I	2	Symphony No. 8 2nd Movt.	Schubert	2	70	1	6	3	2		22	
36 (	}	Prelude to Act III (Logengrin)	Wagner )	1	70	3	18	4	10		2	
37 e	a	Solvejg's Song (Peer Gynt No. 2)	Grieg	2	68	3	10	1	6		12	
38 I	0	Waltz of the Flowers	Tschaikowsky	2	68	3	26				6	
39 0	ł	Waltz (Serenade for Strings)	Tschaikowsky	3	68	2	14	4	2		16	
40 I	£Ъ	Overture to "The Magic Flute"	Mozart	3	68	2	8	4	6		18	

Key			] <u>Cho</u> DIV	Lst Dice 7. %	2 <u>Cho</u> DIV	2nd Dice 7. %	3 <u>Cho</u> DIV	rd ice • %	4 <u>Cho</u> DIV	th ice · %	Unan- swered
41 C	Overture to "Die Meistersinger"	Wagner	l	68	4	20					12
42 D	Overture to "Rienzi"	Wagner	3	66	4	12	l	4			18
43 g	Dance Macabre	Saint-Saens	3	<b>6</b> 6	l	8	2	6	4	2	18
44 C	Symphony No. 5, 4th Movt.	Beethoven	3	66	4	8	1	6	2	4	16
45 a	Symphony in D Minor, 1st Movt.	Franck	1	66	3	16					18
46 a	Symphony No. 3, 1st Movt.	Mendelssohn	3	64	4	6	1	2			28
47 <b>A</b>	Grand Waltz (Faust)	Gounod	2	64	3	18	l	2			16
48 D	Symphony No. 9, 4th Movt.	Beethoven	l	64	4	6	2	4	3	2	24
49 d	Frelude and Fugue in D Minor	Bach	4	64	l	28	3	4			4
50 Ъ	Tale of Kalendar Prince	Rimsky- Korsakov	2	64	3	8	4	4			24
51 e	Symphony No. 5 lst Movt.	Tschaikowsky	1	64	4	10	3	6			18
52 D	Overture to "Oberon"	Von Weber	3	62	2	14	1	4			20
53 🗚	Symphony No. 5, 3rd Movt.	Tschaikowsky	3	62	4	8	2	6			24

(Continued)

Ke	ey			l <u>Cho</u> DIV	st ice · %	2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		4th <u>Choice</u> DIV. %		Unan- swered	
54 {	5	Dance Arabe (Nutcracker)	Tschaikowsky	3	62	2	14	l	8			16	
55 I	b	In the Hall of the Mountain King	Grieg	3	62	1	10	2	8			20	
56 J	Ŧ	In the Village	Ippolito <b>v-</b> Ivanov	2	60	3	10	l	4			26	
57 I	C	Procession of the Sardar	Ippolitov- Ivanov	3	60	1	10	2	4			26	
58 I	2	Symphony No. 2 4th Movt.	Brahms	2	60	4	6	3	4	1	2	28	
59 a	<b>a</b>	Symphony No. 7 2nd Movt.	Beethoven	2	60	3	14	1	4			22	
60 1	Шb	Symphony No. 3 lst Movt.	Beethoven	1	60	4	10	2	8	3	4	18	
61 (	5	Leonore Over- ture No. 3	Beethoven	2	60	3	10	4	8	1	4	18	
62 1	D	Symphony No. 35 lst Movt.	Mozart	4	60	1	10	3	6			24	
63 I	D	Classical Sym- phony, 1st Movt.	Prokofieff	3	60	4	8					32	
64 (	e	Sea and Sin- bad's Ship	Rimsky- Korsako <b>v</b>	2	60	3	10	4	8			22	
65 I	ΞЪ	Overture to "Euryanthe"	Von Weber	2	60	3	18	1	6			16	
66 a	a	Symphony No. 4 lst Movt.	Sibelius	3	58	4	10	2	2			30	

Key	•		lst <u>Choice</u> DIV. %		2nd <u>Choice</u> DIV. %		3rd <u>Choice</u> DIV. %		4th <u>Choice</u> DIV. %		Unan- swered
67 Et	Symphony No. 3 4th Movt.	Beethoven	3	58	l	10	4	4			28
68 D	Symphony in D Minor, 3rd Movt.	Franck	3	58	2	14	4	4	1	2	22
69 D	Overture to "Ruslan and Ludmik"	Glinka	3	56	2	6	1	4	4	,2	32
70 D	Overture to "Stradella"	Flotow	3	56	2	10	l	6			28
71 D	Symphony No. 2 1st Movt.	Brahms	2	56	1	6	3	4	4	2	32
72 D	Polonaise "Christmas Night"	Rimsky- Korsakov	3	56	2	8	4	2			34
73 C	Symphony No. 41 4th Movt.	Mozart	3	54	4	26	1	4			16
74 G	Turkish March (Ruins Athens)	Beethoven	4	54	1	32	3	4			10
75 D	Harvest Hymn	Grainger	2	54	l	16					30