1949

The Bowing Approach to Cello Playing

John C. Hopkins
Central Washington University

Follow this and additional works at: https://digitalcommons.cwu.edu/etd
Part of the Educational Methods Commons

Recommended Citation
Hopkins, John C., "The Bowing Approach to Cello Playing" (1949). All Master's Theses. 32.
https://digitalcommons.cwu.edu/etd/32

This Thesis is brought to you for free and open access by the Master's Theses at ScholarWorks@CWU. It has been accepted for inclusion in All Master's Theses by an authorized administrator of ScholarWorks@CWU. For more information, please contact pingfu@cwu.edu.
THE BOWING APPROACH TO 'CELLO PLAYING

by

John C Hopkins

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Education, in the Graduate School of the Central Washington College of Education

June, 1949
ACKNOWLEDGEMENTS

Much of the underlying philosophy of this method has been influenced by my high regard for the contribution that Mr. George Bornoff has made to violin teaching.

The writer wishes to express his appreciation for the invaluable assistance given by his committee: Mr. Wayne S. Hertz, Chairman, Mr. Herbert A. Bird, Dr. A. J. Foy Cross. Especially is he indebted to Mrs. Ruth Bird, Mr. Herbert A. Bird, and Mrs. Lidabeth Hopkins.
FOREWORD

An examination of the contents of this volume will reveal that its approach to 'cello playing is made through bowing and bow technique instead of through the traditional fingering and finger technique. It differs still further from the traditional approach in that all strings are used from the first lesson instead of each of the four string's being isolated and studied separately. In older methods bowing and bow technique have been neglected until after the pupil has become relatively advanced on his instrument. However, there are good reasons, both psychological and physical, why bowing should be well on the way to mastery before going too deeply into finger technique.

Instrumental music education in the public school has turned away from the playing of stringed instruments and toward the playing of band instruments. This trend probably is a result of the fact that students are able to achieve greater progress in a shorter period of time and so become capable of participation in group activities. After a year of study the band instrument player has become familiar with the entire range of his instrument, and his playing ability has far outstripped his reading ability. This is as it should be; the young pupil is more interested in the actual physical playing and creation of music than he is in the mental activity needed to decipher the printed notes. While it is true that the good musician must be a good "sight reader," and the reading of notes and music is
most important, it is more important that the young student be able to play. With a playing approach rather than a reading approach, his reading will become better because he will read music just as he plays it rather than as isolated single notes. From a psychological point of view, the playing approach engenders a feeling of accomplishment and inner satisfaction with his ability.

If the stringed instrument can be introduced in the same manner as the brass or woodwind instrument, that is, as a whole, the stringed instrument player can progress quickly enough that his interest does not wane, so swiftly that he can become a useful member of an orchestra in a year or two. Under the traditional perfectionistic methods, the student spent several years in lonely study before he was permitted to play in an orchestra. While it is true that the long period of study produced pupils who were more capable of entering an orchestra, it also caused a high mortality rate: young students lost interest in string playing because of a feeling of lack of achievement. It is felt that the attraction of playing with an orchestra at an earlier time would hold the interest and reduce the number of 'drop-outs.'

Children as a rule begin to learn to play an instrument at about ten to twelve years of age, an age when they are by nature gregarious. Band instruments usually are introduced and taught to a group of children. The companionship and enjoyable competition serve to temper the monotony of individual practice. There is no reason why stringed
instruments cannot be taught in groups. They can and have been for some years. With beginners, as much progress can be made with group instruction as with individual instruction; indeed, because of the motivation of the group, perhaps the progress may be even greater. It is true that students should start private lessons approximately a year after beginning the instrument, because of the widely divergent problems that plague the players of strings. However, the group play can be continued after the advent of private instruction. Within a short time the players can be playing in an orchestra. It is entirely possible that the period of group instruction can merge into the period of group playing, and it should be so. This is not to imply that instruction as a group is to cease at the latter period; it goes on as before, and may be intensified.

At the usual age of starting to play an instrument, children are active by nature. It is logical to expect them to be more interested in something that requires large muscular movements and physical exertion than in small muscular movements and abstract thinking. In the playing of stringed instruments, this preference for activity can be capitalized on by directing it into bowing studies which require large-muscle movements of the arm rather than small-muscle movements of the fingers. From a physiological view, the use of the large muscles is the more logical since the fine highly coordinated control of small-muscles is not as yet developed. Moreover, bowing involves producing tones from the strings; many bowing exercises entail playing many tones in a short space of time. This satisfies the psychological
need for a feeling of accomplishment as the student feels that he really is playing something.

Actually, bowing presents more of a problem than does stopping the strings with the fingers, although many string players think their troubles lie in fingering and finger technique. When the moderately advanced student encounters music which requires him to play a fast scale passage with separate bows and is unable to play it to his satisfaction, he is more likely to concentrate on the left hand than on the right. The fallacy of this approach can be demonstrated conclusively by having the student play a scale as fast as he is able to using a single bow and slurring all notes. It will be found that after some practice, he will be able to play this single bowed scale with the desired rapidity. Obviously the fingering was not at fault.

Mastering all kinds of bowing is somewhat akin to learning a spoken vocabulary. If the student has learned the bowing styles to the extent that they do not cause him difficulty, he can express himself in the language of his instrument. The expression becomes creative only when he is no longer plagued with the difficulties of bow technique. It is through the bow that the instrument speaks.

Although the procedures and methods presented in the following pages, and the philosophies which underlie them, are applicable to the study of all bowed instruments, the book is designed specifically for violoncello. Its exercises are planned to cover the underlying principles of 'cello technique: rhythmic precision, bowing styles, acquaintance
with the instrument as a whole, together with repetition and drill. String players as a group are criticized by other instrumentalists for not playing with exact rhythmic preciseness. The most fundamental reason for this defect is that they have never learned to play in a precise rhythm. Bowing difficulties and the requirements of shifting from position to position are largely to blame. In the method here presented, the emphasis is on rhythmic bowing. A consciousness of beats is developed by playing accented groups of notes rather than single notes which stretch over several beats or pulsations of the meter. In a great number of cases the young student studying under traditional methods does not understand the meaning of beats. His notes spread over several beats, he is not made to be conscious of the individual beats and their subdivisions. This method is aimed toward the goal of rhythmic playing through physical activity rather than through abstract mental mathematics.

Basically, there are only two types of tone which can be produced with the bow: sustained legato tones and short tones, with the latter type divided still further into staccato and spiccato tones. This gives three fundamental styles of bowing, of which all others are mere variants. In this 'cello method the student learns to produce legato tones first, then the short staccato sounds, and finally the spiccato or bouncing bow sounds.

The legato exercises serve to introduce the student to his instrument and are included in all 'cello methods. Diligent practice of the staccato and spiccato, however,
are equally important; consequently, exercises in these styles are introduced within the first few lessons. Curiously enough, this type of practice, which often seems distasteful to the advanced student, is particularly congenial, even fascinating, to the neophyte. Staccato bowing is essential to the training of the muscles of the bowing arm. Only by practicing this style of bowing does the student learn to sub-divide his bow so that he can allot equal portions of it to equal notes. Only by staccato practice at the tip of the bow will he be enabled to play long sustained tones and "spun" tones which require heavy but controlled pressure at the tip of the bow. As for the spiccato style, it would warrant inclusion for no other reason than its motivating power. Every string student yearns to be able to play a "flying spiccato." In addition to its being a source of great motivation to the student, spiccato bowing is a powerful builder of the pupil's confidence and of his bow control.

The musician must be familiar with all three fundamental bowing styles to make his playing expressive and interesting. The beginning student seems to have less trouble with them and to be more interested in their mastery than the moderately advanced student. The latter frequently has learned one style fairly well and tries to make it do for all types of playing with the result that his playing is characterized by a curious dull clumsiness, hence the early inclusion of all bowing styles.

Too many 'cellists after several years of study have
become comparatively far advanced and still are not completely acquainted with the instrument as a whole. Their practice has been confined to one string at a time, with the result that the student may have developed a position to fit that particular string, a position which enabled him to get at it with the least amount of trouble. In this method each exercise covers the entire range of the instrument in first position; each string is played on from the start. This procedure will force the student to adopt a playing position which will not hamper his playing at any one point on the instrument.

In devising the exercises to further the above principles of 'cello technique, recognition has been made of the absolute necessity for repetition and drill. The need is self evident: no skill requiring precise muscular movements and delicate coordination can be acquired without much repetition and drill, whether it be throwing a ball or playing a musical instrument. This method book contains many variations on simple note progressions which provide the repetition essential to mastery of the instrument. An attempt has been made to avoid the monotony and purposelessness which often plague a method book of this type. In addition to variation of both notes and rhythms, the commonly used and practical bowings peculiar to 'cello are included. Simple as they seem on cursory inspection, they are ample as preparation for playing virtually one hundred per cent of the music written for 'cello.

In conclusion, it must be understood that this book is
not designed to be used alone. There must be supplementary material which may be in the form of any good standard 'cello method and a collection of solos in the first position. If a suggestion may be offered to the teacher using this book, it would be to have the young student actually playing before he is confronted with the problems of music notation. Make the initial introduction of the student to string playing by demonstration and rote, then show him what he has been playing on the printed page.

The material here presented is planned to cover a period of five or six months. The over-all goal is to enable the beginning student to speed up his progress of the first few years, to arrive at a point where he is satisfied that he really can play the instrument, and to fit him to play in an orchestra within the first year. This acceleration, it is hoped, may hold the interest of the students so that the mortality rate of beginning string players may be lessened.
Proper Playing Position
Parts of the 'cello and bow
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Exercise</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>Exercise</td>
<td>Page</td>
</tr>
<tr>
<td>FOREWORD</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

## SECTION ONE: THE OPEN STRINGS

### Legato Notes of One Beat or Less
- One Note to a Beat
- Four Notes to a Beat
- Three Notes to a Beat

### Staccato Notes
- Two Notes to a Bow
- Three Notes to a Bow
- Four Notes to a Bow
- Eight Notes to a Bow
- Twelve Notes to a Bow
- Sixteen Notes to a Bow

### Spiccato
- Four Notes to a Beat
- Three Notes to a Beat

### Legato Notes of More Than One Beat
- Notes Lasting Two Beats
- Notes Lasting Three Beats
- Notes Lasting Four Beats

## SECTION TWO: THE FOUR FINGER PATTERNS

### The First Finger Pattern

#### Legato Notes of One Beat or Less
- One Note to a Beat
- Four Notes to a Beat
- Three Notes to a Beat

#### Staccato Notes
- Two Notes to a Bow
- Four Notes to a Bow
- Two Notes to a Bow

#### Legato Notes of More Than One Beat
- Notes Lasting Two Beats
- Notes Lasting Three Beats
- Notes Lasting Four Beats

### The Second Finger Pattern

#### Legato Notes of One Beat or Less
- One Note to a Beat
- Four Notes to a Beat
- Three Notes to a Beat
### Staccato Notes
- Two Notes to a Bow: 40 27
- Four Notes to a Bow: 41 28
- Two Notes to a Bow: 42 28

### Legato Notes of More Than One Beat
- Tones Lasting Two Beats: 43 29
- Tones Lasting Three Beats: 44 29
- Tones Lasting Four Beats: 45 29

### The Third Finger Pattern
**Legato Notes of One Beat or Less**
- One Note to a Beat: 46-52 30
- Four Notes to a Beat: 53-57 33
- Three Notes to a Beat: 58-62 36

**Staccato Notes**
- Two Notes to a Bow: 63 39
- Four Notes to a Bow: 64 40
- Two Notes to a Bow: 65-66 40

**Legato Notes Longer Than One Beat**
- Notes Lasting Two Beats: 67-68 40
- Notes Lasting Three Beats: 69 41
- Notes Lasting Four Beats: 70 41

### The Fourth Finger Pattern
**Legato Notes Lasting One Beat or Less**
- One Note to a Beat: 71-77 42
- Four Notes to a Beat: 78-82 45
- Three Notes to a Beat: 83-86 41

**Staccato Notes**
- Two to a Bow: 87 51
- Four to a Bow: 88-90 52

**Legato Notes Longer Than One Beat**
- Tones Lasting Two Beats: 91-92 52
- Tones Lasting Three Beats: 93 53
- Tones Lasting Four Beats: 94 53

### Section Three: Slurring

**The Open Strings**
**Legato Notes of One Beat or Less**
- Two Notes to a Bow: 1 54
- Three Notes to a Bow: 2 54
- Four Notes to a Bow: 3 54
- Eight Notes to a Bow: 4 54
- Two Notes to a Bow: 5 54

**Legato Notes of More Than One Beat**
- Two Beat Tones, Two to a Bow: 6 55
- Combinations of One and Two Beat Tones (Two Quarters and a Half): 7 55
### Quarters and Dotted Halves
- **8**: 55
- **9**: 55

#### The First Finger Pattern
- **Two Tones Slurred, One Detached**: 11-12 56
- **Four Tones Slurred, One Detached**: 13-14 57
- **Three Tones Slurred, One Detached**: 15-16 58
- **Two Tones Slurred**: 17 59
- **Three Tones Slurred**: 18 59
- **Four Tones Slurred**: 19-20 60

#### The Second Finger Pattern
- **Two Tones Slurred, One Detached**: 21-22 61
- **Four Tones Slurred, One Detached**: 23-24 62
- **Three Tones Slurred, One Detached**: 25-26 63
- **Two Tones Slurred**: 27 64
- **Three Tones Slurred**: 28 64
- **Four Tones Slurred**: 29-30 65

#### The Third Finger Pattern
- **Two Tones Slurred, One Detached**: 31-32 66
- **Four Tones Slurred, One Detached**: 33-34 67
- **Three Tones Slurred, One Detached**: 35-36 68
- **Two Tones Slurred**: 37 69
- **Three Tones Slurred**: 38 69
- **Four Tones Slurred**: 39-40 70

#### The Fourth Finger Pattern
- **Two Tones Slurred, One Detached**: 41-42 71
- **Four Tones Slurred, One Detached**: 43-44 72
- **Three Tones Slurred, One Detached**: 45-46 73
- **Two Tones Slurred**: 47 74
- **Three Tones Slurred**: 48 74

### Section Four: Staccato Notes Played on the Same Bow

#### The First Finger Pattern
- **Two Staccato Notes, One Detached**: 1-2 75
- **Four Staccato Notes, One Detached**: 3-4 76
- **Three Staccato Notes, One Detached**: 5-6 77
- **Two Staccato Notes, Two Slurred**: 7 78
- **Three Staccato Notes, Three Slurred**: 8 78
- **Four Staccato Notes, Four Slurred**: 9-10 79

#### The Second Finger Pattern
- **Two Staccato Notes, One Detached**: 11-12 80
- **Four Staccato Notes, One Detached**: 13-14 81
- **Three Staccato Notes, One Detached**: 15-16 82
- **Two Staccato Notes, Two Slurred**: 17 83
- **Three Staccato Notes, Three Slurred**: 18 83
- **Four Staccato Notes, Four Slurred**: 19-20 84

#### The Third Finger Pattern
- **Two Staccato Notes, One Detached**: 21-22 85
- **Four Staccato Notes, One Detached**: 23-24 86
- **Three Staccato Notes, One Detached**: 25-26 87
- **Two Staccato Notes, Two Slurred**: 27 88
- **Three Staccato Notes, Three Slurred**: 28 89
- **Four Staccato Notes, Four Slurred**: 29-30 89
The Fourth Finger Pattern

Two Staccato Notes, One Detached 31-32 90
Four Staccato Notes, One Detached 33-34 91
Three Staccato Notes, One Detached 35-36 92
Two Staccato Notes, Two Slurred 37 93
Three Staccato Notes, Three Slurred 38 93
Four Staccato Notes, Four Slurred 39-40 94

SECTION FIVE: SPIECATO NOTES ON SAME BOW

Directions on page 94a. Use bowings and notes of SECTION FOUR; pages 75 to 94 the first time through only.

SECTION SIX: SCALES AND PROPER FINGERINGS

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2</td>
<td>96</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>96</td>
</tr>
<tr>
<td>Eb</td>
<td>4</td>
<td>96</td>
</tr>
<tr>
<td>F</td>
<td>5</td>
<td>96</td>
</tr>
<tr>
<td>G</td>
<td>6</td>
<td>96</td>
</tr>
<tr>
<td>A</td>
<td>7</td>
<td>95</td>
</tr>
<tr>
<td>Bb</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Alternate Bowings

SECTION SEVEN: SHIFTING AND PLAYING SCALES WITH ONE FINGER

<table>
<thead>
<tr>
<th>Scale</th>
<th>8</th>
<th>97</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2</td>
<td>97</td>
</tr>
<tr>
<td>D</td>
<td>3</td>
<td>97</td>
</tr>
<tr>
<td>Eb</td>
<td>4</td>
<td>97</td>
</tr>
<tr>
<td>F</td>
<td>5</td>
<td>97</td>
</tr>
<tr>
<td>G</td>
<td>6</td>
<td>97</td>
</tr>
<tr>
<td>A</td>
<td>7</td>
<td>97</td>
</tr>
<tr>
<td>Bb</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ILLUSTRATIONS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proper Playing Position</td>
<td>1x</td>
</tr>
<tr>
<td>Parts of the 'Cello and Bow</td>
<td>x</td>
</tr>
<tr>
<td>Holding the Bow</td>
<td>5a</td>
</tr>
<tr>
<td>The Finger Patterns</td>
<td>5a</td>
</tr>
</tbody>
</table>
SECTION ONE

The Open Strings
Detached Strokes Using The Whole Bow

This section contains notes representing every tone which can be played on the 'cello without using the fingers of the left hand. One must be careful to use every inch of the bow for each tone. Long smooth strokes played in a confident manner will produce full, rich tones.

When moving from string to string you must have a firm grip on the bow or scratchy unpleasant sounds will be produced. Try to keep perfect time in all exercises. A bodily movement such as tapping the foot will help you feel the rhythm, especially when there are rests. Rests are every bit as important as notes; count them just as carefully.

You will notice that there are accent marks all through the music. These must be observed carefully. They will help you play with good rhythm. Try to make your accents just as strong when you play up bow as when you play down bow.
Spiccato Stokes In The Lower Third Of The Bow

The exercises ten through seventeen are marked to be played spiccato. In this style of bowing the bow bounces on the string. Use about two inches of bow close to the frog. Spiccato is produced by a movement of the whole arm. You must have a firm hold on the bow to do it properly. It is an enjoyable kind of playing and it will help you to develop good bow control.
Staccato Strokes Using The Whole Bow

The exercises which are marked staccato are played with a quick jerk of the bow across the string and a sudden stop. Maintain the bow pressure in between notes. Try to space your bow so that each note gets its full share. In this type of bowing the arm and wrist must remain stiff. You will find that the tones played at the tip of the bow tend to be weaker than those played at the frog. In order to make them of the same intensity, increase the bow pressure as you move toward the tip. This type of playing will help you develop your long tones by making the pressure the same at the tip and frog.
Legato Tones Played With Whole Bow

Try to make your playing sound smooth and even. The speed of the bow must not change during the note.

25 \textit{Legato W.B.}  

26 \textit{Legato}  

27
...holding the bow...

Finger Patterns

1st pattern

2nd pattern

3rd pattern

4th Pattern
The Four Finger Patterns

A finger pattern is a way of placing your fingers on the string. Basically there are only four finger patterns used in 'cello playing. In the first and second patterns the fingers are all the same distance apart. In the third and fourth patterns the first finger is stretched back toward the nut.

Be sure that you press the strings down firmly with the part of the finger which is just opposite the finger nail... almost at the tip of the finger... and be sure that the fingers are curved over the finger board. You have already mastered the bowing styles required and should be able to devote your full attention to the fingers of the left hand. Do not lift the first finger when playing the second, third, or fourth. Keep all fingers down as long as possible.

Learning all four finger patterns when you begin your 'cello playing will let you play music written in many different keys right from the start. Listen and adjust your pitch to sound of the piano as your teacher plays with you.
Second Pattern
Third Pattern
Fourth Pattern
First Finger Pattern
Third Finger Pattern

simile
Fourth Finger Pattern

simile

\( \text{\textbf{41}} \)

\( \text{\textbf{24}} \)

\( \text{\textbf{10,000}} \)
SECTION FOUR

Staccato Notes Played On The Same Bow

Notice that the bowing mark or slur mark in this section does not mean to connect the tones smoothly, because there are dots over or under the notes which tell us that the tones are to be short. Be sure to use the whole bow and divide it evenly. Remember that it must stop completely between tones. It will help you to develop a smooth style of playing if you practice each exercise by starting with a down bow as well as an up bow. This practice will help you control the up bow in legato playing which is a little harder to control than the down bow.
Repeat 1 to 10 opposite bowing
Repeat 11 to 20 opposite bowing
Third Finger Pattern
31st Fourth Finger Pattern

\[ \text{VI} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]

\[ \text{III} \quad \text{II} \quad \text{III} \quad \text{II} \]
SECTION FIVE

Spiccato Tones Combined With Legato Tones

Use the notes and bowings of SECTION FOUR. Remember to use only one or two inches of bow close to the frog. The purpose behind this group of exercises is the combining of spiccato tones with sustained or legato tones, something often done in 'cello music. Since you know how to do both types of bowing, you should have no great difficulty in putting the two kinds together.
SECTION SIX

Scales Showing Combinations of Finger Patterns Required

You have noticed that a scale starting on an open string can be played with the second finger pattern through two strings. If you go through another string it doesn't sound right. To play in the same scale (or key) through more than two strings you must change your finger pattern. This section will show you how finger patterns are changed as you play from string to string in the same key. Listen carefully and get it in tune.

C scale — 2nd Pattern

Try these different bowings
1. Use the suggested bowings page 95.

2. Make up some bowings.

3. Be sure to play the scale back down.
SECTION SEVEN

Shifting and Playing Scales With One Finger

This set of exercises will do a great deal toward helping you play in tune. First play the scale using the finger patterns of SECTION SIX to get your ear accustomed to the sound. Then play the same scale, but use only one finger and shift from tone to tone. Be sure that you play the scale up and down, not just up. Now play the scale a third time using the patterns of SECTION SIX as at first. Try to make the three scales sound exactly the same. Do your shifting quickly and surely.

1. Your teacher may suggest other scales.
2. Use the bowings suggested on page 95.
3. Make up some new bowings.
If a bowing approach were to be used widely in class or private instruction in the schools, the writer believes the number of string players (particularly 'cello players) would increase. He believes further that the overall quality of string teaching and playing would be improved by such a kinesthetic approach.

In working out the ideas in this 'cello method, it seems to the writer that rhythmical and tonal possibilities of the first position have been exhausted. Further study in this field would involve the application of these principles to the higher positions.
BIBLIOGRAPHY


Flesch, Carl, *The Art of Violin Playing*, New York: Carl Fischer, 1924


Schroeder, Alvin, *170 Foundational Studies for Violoncello*, New York: Carl Fischer


We the undersigned approve the material submitted by Mr. John C. Hopkins to fulfill the thesis requirements for the degree of Master of Education.

APPROVED FOR THE GRADUATE FACULTY

_________________________________
Wayne S. Hertz, CHAIRMAN

_________________________________
A. J. Foy Cross

_________________________________
Herbert A. Bird

June 2nd. 1949