Time and Stress in English Verse
With special reference to
Laniér's Theory of Rhythm

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PREFACE

THE primary aim of this study is to show as clearly as can be done on paper that an understanding of verse rhythm is not possible without an understanding of syllabic timing. Since Sidney Lanier was the first prosodist in America to attempt a systematic elucidation of durational syllabic relationships, a secondary goal is to rescue Lanier’s significant work from dis-credit and neglect. I have brought to the task what I think are the full resources of modern prosody. I hope the discussion will give the reader a fresh and interesting view toward the whole subject of verse rhythm.

The treatise is not primarily for other prosodists. What I have tried to do is to present information known chiefly by special students in terms that interested people, other than experts, can comprehend. This is a difficult task. William Thornson, for example, who wrote the greatest book on this subject, evidently failed to do it. Lanier only partially succeeded. There are few professional students of prosody, and very few of these have attempted to bridge the gap between the findings of the researcher and the interested student, teacher, or general reader who wishes to keep abreast of knowledge in this field.

The study contains many notations of metrical analysis. To avoid possible confusion, it should be mentioned in advance that the notation of a given verse or stanza is never intended to pre-scribe an exclusive reading of it. As will be explained and illus-trated in the text, different readers, or the same reader in differ-ent moods or for different purposes of expression, will slightly vary syllabic distributions, tempo, intonation, and other inter-pretative features. Variation in these features in no way alters the foundation principles of rhythm which we are studying. Laws do not vary from poet to poet or from reader to reader.
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In my notations of verse I have (except where otherwise specified) tried to present a typical or natural reading, free of special manner or distortion, something that any educated person would feel to be usual and acceptable. The reader need entertain no anxiety or perplexity in possible cases where his own taste or feeling produces renderings not precisely in accord, on the surface level, with those I have used. Such variations, I should add, are especially likely to occur in the matter of sylabic distributions or apportionments.

A further disclaimer is in order with regard to notational symbols. These numbers, bars, notes, or whatever else, represent only graphic translations of rhythmic sound. They have nothing whatever to do with the problem of good, bad, or indifferent readings; they can, in fact, be used to record readings of any quality or character.

The study, it should be particularly noted, is directly concerned only with English speech and its rhythms, so that, unless otherwise mentioned or implied, general terms (such as poetry, verse, rhythm, stress, and the like) have their reference in phenomena of the English language. Certainly the basic principles discussed are applicable to other languages, for the rhythmic arts of mankind have qualities in common by virtue of being rhythmic; but exploration of these connections lies beyond our present scope.

This treatise is of course indebted to the work of many prosodists, but the debt is heaviest to William Thomson’s The Rhythm of Speech (Glasgow, 1923) and Morris W. Croll’s The Rhythm of English Verse, a multigraphed booklet issued at Princeton University in 1925. I am especially grateful also to Paull F. Baum’s The Principles of English Versification (Cambridge, U.S.A., 1924) and to the same author’s introduction to Volume II of the Centennial Edition of Lanier’s works (Johns Hopkins Press, 1945). Other sources directly used are paren-
Preface

thetically indicated through the text. In terminology I have mainly followed Croll and Thomson, and if, through long familiarity with their ideas, I have unconsciously included a turn of phrase here and there from one of them, I should not be surprised.

The foundation work of the study was done at the Rice Institute. Subsequent changes or additions are merely elaborations of the original treatise.

J. W. H.

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TIME AND STRESS IN ENGLISH VERSE

with special reference to

LANIER’S THEORY OF RHYTHM

THE PROBLEM

FOR generations the educated world has used the foot system (iamb, trochee, anapest, and the like) as a means of studying and designating patterns of meter in verse. This system, as employed, has had a limited usefulness. One can refer to Shakespeare’s iambic pentameter and convey the notion of a five-stress line whose syllables usually alternate in a weak-strong order. Or one can speak of Poe’s *Raven* as written in trochaic octameter and mean that the lines of eight stresses begin with strong syllables and continue, barring irregularities, according to a general scheme of strong-weak alternation. And so on through the other familiar terms and conceptions.

About a century ago, however, American prosodists became dissatisfied with the vague labelings offered by traditional methods. An interest developed in the actualities of the rhythm of verse, in whose analysis and description the foot was proving itself an inadequate instrument. For metrical study it was a time of confusion and widespread controversy. Poe put the matter in a nutshell when he declared, with his usual candor: “There is perhaps no topic in polite literature which has been more pertinaciously discussed; and there is certainly not one about which so much inaccuracy, confusion, misrepresentation, mystification, and downright ignorance can fairly be said to exist.” Poe himself, taking his cue from the Greeks, tried to remedy conditions by calling attention in his *Rationale of Verse* to the necessity of reckoning with syllabic timing in metrical
analysis. He was followed by Sidney Lanier, who attempted a systematic criticism, including the delicate task of making actual syllabic measurements. Since Lanier a few able prosodists in America have continued the investigation of metrics with some degree of success, while in foreign countries (notably Scotland, France, Germany, and Russia) students of the subject have likewise made valuable contributions. In comparison with other fields of literary research, prosody at the present time is not actually in arrears.

General knowledge of the subject, on the other hand, is decidedly in arrears. For reasons we will not trouble to review here, the findings of the investigators have not received adequate dissemination. As a result, errors in rhythmic analysis still flourish and are daily propagated in the classroom. It is not true, for instance, that English verse is "accentual as opposed to quantitative," or that such terms designate mutually exclusive principles, or that iambic and trochaic patterns represent different rhythms, or that verse sections shorter than two syllables or longer than three are necessarily redundant or fragmentary or otherwise irregular, or that one can discover the rhythm of a verse by simply dividing it into feet. Neither is it true that the unit called the foot is to verse what the measure is to music, or that the foot is to verse what the measure is to verse, or that a foot is a definable entity, or that accent (stress) in itself sufficiently accounts for rhythm. Fallacies of this sort no longer deserve hospitality in our midst, as I shall attempt to show.

The aim of the present study is to explain the foundation principles of verse rhythm most useful as antidotes for confusion. For this purpose I have selected Sidney Lanier as a main point of departure and reference because of the particular direction of his work. The matter of syllabic timing is the great blind spot of English prosody. Lanier realized the nuclear significance of this problem and directed his efforts toward its solution.
The Problem

Contrary to notions held by many of his critics, Lanier was not talking nonsense or trafficking in mysteries. It is true that his treatise is uneven; it is by no means the definitive work he had hoped for; the gold has to be panned out. But once this is done, a grasp of his valid elucidations will enable anyone to understand the function of accent (or stress—I shall use the words interchangeably) in its true bearing: i.e., in its coordination with measured syllabic duration. Clear perception of this organic relationship will go far, in itself, toward dispelling the worst of the popular academic misconceptions. In the light of more recent knowledge, too, we are in a position now to do some important things for Lanier that he was not able to do for himself: to correct his inaccuracies and supplement his incompleteness. In the commentary sections, and incidentally elsewhere as opportunity offers, I shall go considerably farther than Lanier in the attempt to make his basic principles clear. And I must add that, while this monograph is not intended primarily as an apologia for Lanier, I should be glad if it did simple justice to a great, and much misunderstood, researcher.

Lanier's pioneer work on prosody, The Science of English Verse, was written in 1879 during a forty-day effort which its author cheerfully referred to as a summer vacation, but which in reality must have been a heroic struggle against heavy odds. Six weeks, under any circumstances, would be a cruelly short time in which to compose so difficult a book; and the composer, at the time, was far gone in the disease which shortly afterward ended his life. The book shows signs of haste, as if its writer were exerting himself to the limit before his strength should fail, and the inference is inescapable that his condition had something, perhaps much, to do with the occasional loose assertions and lapses of his exposition. Lanier's distinguished attainments as both poet and musician also deserve preliminary mention. It was his training in the exacting rhythmic disciplines
of music which enabled this experienced composer of verse to recognize so clearly the true structural components of metrical language. Speaking practically, few prosodists have brought to their work so advantageous a combination of skills.

TRADITIONAL SCANSION

The best way to gauge the value of a new theory involving an analytical method is to compare it with what it was intended to supplant. Before examining Lanier, therefore, let us observe several of the typical difficulties which render the foot system unfit as an instrument of rhythmic study, however useful it may have been in the loose designations for which it has been traditionally employed.

Our familiar foot scansion, despite its ambiguities and equivocations, will provide a rough metrical account of poetry which has been deliberately composed to fit its patterns. Such poetry has always been written, sporadically at least, and was especially favored during earlier centuries when learned English versifiers were consciously studying and imitating the syllabic figures of Classic and French verse. English poetry, however, gradually grew free of this feeling of apprenticeship. The Romantics made bold to follow the lead of their own language idiom and the unhampered speech rhythms naturally belonging to it. During the past century and a half, by following the policy of linguistic independence and especially by assimilating the rhythms of folk-poetry, learned English verse has added to its repertory a wealth of handsome rhythms obviously never recognized by the inventors of the English feet. Effects of this sort one could hardly expect to analyze with an apparatus originally devised to meet the demands of Greek music and verse. The foot system is helpless to deal with dipodic verse structure and extremely lame in its efforts to handle such common stanzas as those of the ballad or song-like lyric. Any sys-
Traditional Scansion

**tem** which makes a controversial crux out of such a simple quatrain as the one used in Tennyson’s “Break, Break, Break” stands in need of replacement or at least of major revisions.

That traditional scansion, as a system, can only be criticized in terms other than its own goes without saying. Rhythm cannot be talked about without measurements of time any more than distances can be talked about without measurements of space. The advantage of the arithmetical figures chosen for use in this preliminary section is that their proportional relationships are familiar to everyone. And syllabic durations must somehow be translated into visual symbols if communication is to be achieved.

*Preparatory experiment:*

The stag at eve had drunk his fill.

The first step in the experiment is to read the preceding quotation aloud in a natural manner. Now repeat the line six or eight or a dozen times, saying it a little more slowly each time. It is important to speak audibly and to retard gradually, so that the recitation is in no way distorted but remains perfectly natural, only slower. When you are speaking quite slowly, notice that the syllables *stag, eve, drunk,* and *fill* take considerably longer to pronounce than the other syllables *The, at, had, his.* This is the difference between *long* and *short* syllables. Now speak the line “All the men were there” and follow with “All the women were there.” Notice that you recite both lines in the same amount of time, and that the syllable *men* occupies the same amount of time as the syllables *women.* Check this by comparing the phrases *men were there* and *women were there,* spoken naturally and in direct succession. What you are witnessing is a long syllable (*men*) occupying the same time as two short syllables (*women*). The mathematical ratio is a plain and easy 1 to 2, or in converse comparison 2 to 1. The phenomenon does not represent a view or claim or item of doctrinary dogma. It exists
in the language and is simply there to be heard. Using ordinary numbers, the syllabic timing (relative syllabic durations) of the two sentences can be shown as follows.

\[
\begin{array}{|c|c|c|}
\hline
\text{All the} & \text{men were} & \text{there} \\
2 & 1 & 2 \\
\hline
\text{All the} & \text{women were} & \text{there} \\
2 & 1 & 1 & 1 & 2 \\
\hline
\end{array}
\]

Each stressed syllable is preceded by a vertical bar; or, in other words, the bars function as accent-marks for the syllables which adjacently follow them. This barring designates the language rhythm of one simple prose pattern. Poets, one might add, do not actually create rhythms. What they do is to arrange and deploy rhythms developed long ago in the natural evolution of speech idiom. No one could tell, apart from context, whether “I come to bury Caesar, not to praise him” were prose or blank verse. “I’ve been to my sweetheart, Mother” sounds rhythmically the same when spoken as a casual remark as it does in the metrical stanza of Lorâ Randal from which it is taken. Any skillfully written line of verse in the language would illustrate the same truth.

A few variations may be useful in further clarifying the points we have observed. (Durations are, of course, strictly relative, not absolute.)

\[
\begin{array}{|c|c|c||c|}
\hline
\text{Some of the} & \text{men came} & \text{home} \\
1 & 1 & 1 & 2 \\
\hline
\text{Many of the} & \text{women came} & \text{home} \\
\frac{1}{2} & \frac{1}{2} & \frac{1}{2} & \frac{1}{2} & 1 & 2 \\
\hline
\text{The} & \text{stag at} & \text{eve had} & \text{drunk his} & \text{fill} \\
1 & 2 & 1 & 2 & 2 & 1 & 2 \\
\hline
\text{The} & \text{stag that} & \text{morning had} & \text{eaten his} & \text{breakfast} \\
1 & \frac{1}{2} & \frac{1}{2} & 1 & 1 & 1 & 2 & 1 \\
\hline
\end{array}
\]
Traditional Scansion

The reader is urged to read these little demonstrations aloud, repeatedly, and at various tempos. Carefully observed, they will make clear that syllables do vary in duration and seem to do so in simple ratios observable by our ears and normal rhythmic faculties. That these durational ratios are real, not merely semblances, will become unmistakable, I trust, as our study proceeds. The examples just presented also indicate how natural speech rhythms furnish the raw material for metrical verse.

The tapping test: This is a simple method of bringing vocal activity up from the subconscious level into the daylight of visible observation. Procedure consists of tapping the succession of syllables in a verse at their points of onset. Fingers or a pencil are convenient instruments. The trick is not at all difficult. It is best to start with the simplest and least varied meters, and helpful to recite the verse a number of times before beginning to tap, slowing the tempo gradually but carefully preserving the natural rhythm. Then tap with the syllables as they go by, striking a little blow as you hear each syllable begin. In this process what you are doing is striking the syllables in order in exactly the same way as one would do it at the piano keyboard in playing a simple piece of music. The jog-trot rhythms of nursery rhymes are the easiest of all to hear and reproduce by tapping.

<table>
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<th>Taf fy</th>
<th>was a</th>
<th>Welsh</th>
<th>man</th>
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<tr>
<td>&quot;&quot;</td>
<td></td>
<td>&quot;&quot;</td>
<td>(')</td>
</tr>
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</table>

Taf fy was a thief

Build up gradually. At first, tap only the syllables below the double accent marks (""), Taf, Welsh, etc. These are the primary stresses. Then tap all the syllables under accent marks, both double and single. You are now tapping the metrical stresses of the measures. Finally tap all the syllables. You are now tapping the syllabic organization that defines the rhythm of the verses.
Time and Stress in English Verse

By carrying out the same procedure with the next couplet, one can clearly detect its disyllabic triple rhythm. Notice the plain contrast of long and short syllables.

We reached the barn with merry din
And 'roused the prisoned brutes with "

Applied to blank verse, the technique will show its triple rhythm and its arrangement of long and short syllables.

It blesseth him that gives and him that takes

The exercises may be rudimentary, but they produce a clear and effective auditory analysis of the verse rhythm.

Let us now examine some samples of poetry according to the usual rules of foot scansion. The three test cases to follow are selected from a larger number mainly because they present the easiest problems of explanation.

Case I

In rhythmic study one deficiency of the foot system is that its terms are ambiguous and so cannot be relied upon to convey definite rhythmic information.

Foot scansion is achieved by the use of vertical bars which designate feet, accompanied by a series of marks indicating stressed and unstressed syllables. Among the latter marks, macrons and breves have been commonly employed, the macron (-) indicating a stressed syllable and the breve (-) an unstressed. As ordinarily practiced, neither mark has anything to do with syllabic duration. Thus the old custom, still surviving in some quarters, of calling these marks "longs" and "shorts" (as if they served to denote long and short syllables) is a bewildering piece
Traditional Scansion

of mystification, since, as we have seen, there are such things as long and short syllables. A more confusing pair of names could not be found in the language. Actually one could do better by calling the marks owls and nightingales or cowboys and Indians.

We now turn to observe foot patterns in action. The two lines in Example 1, taken from different poems, are both in what conventional scansion calls dactylic verse. (Surely a trochaic interpretation would be inconceivable.) Each line, as usual, contains one or more feet which do not conform to the pattern and are therefore classed as irregular.

Ex. 1

A. She had more riches than Croesus pos

B. Loud sang the souls of the jolly mariners

According to foot conceptions of English verse, these lines, being both dactylic, are of course identical in rhythmic movement if the word dactyl is assumed to have any definite rhythmic meaning. But the feet, however plausible they may look on paper, lead us into immediate trouble here, for a natural reading shows at once that the two rhythms are quite different. No reader innocent of foot conceptions would ever suppose that they were the same. What accounts for the difference in the rhythmic swing of the two lines? Syllabic timing does. The simple fact is that line A is in triple rhythm, while line B is in duple. Triple rhythm is a movement we can express by counting one-two-three, one-two-three, etc., with the accent always on one. Duple rhythm is a movement we can express by counting one-two, one-two, etc. (accenting one); or by counting one-two-three-four, one-two-three-four, etc., with primary (stronger) stress on one and secondary (weaker) stress on three. The two rhythms differ from each other in the same way that a waltz differs from a march, a
contrast which can be translated into visible movement by imagining an unfortunate squad of soldiers marching to waltz time. In line A we have an arrangement of three short syllables to the measure in the time ratio 1-1-1; whereas in line B the measures are true Greek dactyls: a long syllable followed by two short ones in the time ratio 2-1-1, meaning simply that the long syllable is sensibly equal in time to the two short ones. (Not equal, of course, in the abstract mathematical sense, but equal as our minds understand equality in any rhythmic action—walking, for example, or dancing, or the beat of the conductor's baton.) The reader should try the revealing experiment of attempting to read each of these lines in the natural timing of the other, i.e., line A in duple and B in triple. In other words, read one line over properly a number of times; then try to read the other in the pattern which the reading has established in your mind. Both lines and the poems from which they are taken are well-formed examples of their types, separated fundamentally by their nature, so that the ear of a child can detect and reproduce the difference. Yet the notation is able to make no distinction between the two.

Now let us try, instead, a realistic and accurate method of analysis and notation. The following diagrams will show the distinct rhythmic patterns of the two poems. I am using the vertical bars, as before, to precede (and thus to designate) the metrically stressed syllables, but in this example I am adding ordinary accent marks for extra clarity. The subjacent arithmetic indicates the time values of the syllables.

Ex. 2

A. 

```
  She had more riches than Croesus possessed
  1 1 1     1 1 1     1 1 1
```

(Movement: three units or beats to the measure)

B. 

```
  Loud sang the souls of the jolly jolly mariners
  2 1 1     2 1 1     1 1 1 1 1 1
```

(Movement: four units or beats to the measure)
Traditional Scansion

Carefully studied and tested (try tapping them out with your fingers or reading them very slowly) these examples should reveal the ambiguity of the so-called English dactyl. What is true of the dactyl, let us not forget, is true of the other feet. An English trochee, for example, consisting of a stressed plus an unstressed syllable, may occupy time in the ratios long-short, short-long, long-long, or short-short, and the various combinations do not represent a uniform rhythmic pattern.

Case II

A second deficiency in the foot system is that it contains no regular provisions for verse sections shorter than two syllables or longer than three.

A random line from Masefield’s “Cargoes” will illustrate this difficulty.

| Ex. 3 | Dipping through the tropics by the palm- green shores |

First we try the obvious trochaic conception. It proves impractical, because feet 5, 6, and 7 are not trochees, in fact are not feet at all, having only one syllable. Let us try again.

| Ex. 4 | Dipping through the tropics by the palm- green shores |

Here we convert feet 5 and 6 (which were no proper feet) into a single spondee and overcome that difficulty. But now foot 5 is double the time length of the normal feet, which is nonsense if foot 5, as a foot, is to retain rhythmic meaning. What we have done is to read the line as a hexameter, which it certainly is not. And foot 6 is still no foot. Let us try once more.

| Ex. 5 | Dipping through the tropics by the palm- green shores |
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Here, reversing procedure, we combine feet 1 and 2, 3 and 4, and make each of these groupings commensurate with foot 5. This is a good analysis, but we have destroyed all the feet except the spondee.

It is evident that a logical division of this line into feet is not possible. By doing without the feet, however, a self-consistent analysis is quite simple. In Example 3 it is half accomplished. Let us employ the barring of Example 3 and add the time values of the syllables.

\[
\text{Ex. 6} \begin{array}{|c|c|c|c|c|c|}
\hline
\text{Dipping} & \text{through the} & \text{tropics} & \text{by the} & \text{palm-green} & \text{shores} \\
1 & 1 & 1 & 1 & 2 & 2 \\
\hline
\end{array}
\]

This is a proper start, but there is more to be said about the accentual design of this verse. All English verse has a tendency toward dipodic structure, i.e., a tendency to accent some of its metrically stressed syllables more than others and to do this in a regular pattern of alternation. In some types of verse structure the alternating pattern is so firmly defined as to be generally recognized by prosodists. The septenary pattern we are dealing with here is such a one. Here we have seven metrical stresses in the line and they alternate in a strong-weak pattern, an excellent example of dipodic verse. The structure can be represented by barring every measure and indicating the superior stresses by some special device, such as the double-bar:

\[
\text{Ex. 7} \begin{array}{|c|c|c|c|c|c|c|}
\hline
\text{Dipping} & \text{through the} & \text{tropics} & \text{by the} & \text{palm-green} & \text{shores} \\
1 & 1 & 1 & 1 & 2 & 2 \\
\hline
\end{array}
\]

Or the structure can be more simply shown by combining the simple measures into double-measure combinations (compound measures). In this scheme the weaker (mid-measure) stress is merely implied or assumed, as happens in 4/4 or 6/8 time signatures in music.

\[
\text{Ex. 8} \begin{array}{|c|c|c|c|c|c|}
\hline
\text{Dipping through the} & \text{tropics by the} & \text{palm-green} & \text{shores} \\
1 & 1 & 1 & 1 & 2 & 2 \\
\hline
\end{array}
\]
Traditional Scansion

In the last three examples the sections are marked out according to the unequivocal principle axiomatic in all rhythmic arts, that the metrical stresses define the rhythm and establish the natural measures or divisions, just as, when a man walks, a step consists of the distance between footfalls. In Example 7 we have seven simple measures, each beginning with a stress (analogous to the footfall) and within each measure are two short syllables or their equivalent. In Example 8 there are four compound measures, each beginning with a strong stress and containing a weaker stress in mid-measure. These examples, I believe, are simple representations of the rhythmic events which happen, and which anyone can hear, when the line is read. There are no exceptions, or irregularities, or misfits, or puzzles, or strained ingenuities. As noticed above, no likewise accurate, sensitive, and consistent account can be rendered by foot machinery. The verse we have tested is of course no freak or museum curiosity. Its characteristic duple (or if you prefer, quadruple) rhythm is common in English poetry from Mother Goose to Masefield.

Case III

A third deficiency in the foot system is that its unit, the foot, cannot be generically defined, so that no logical method can be devised for determining where one foot stops and the next one begins.

There is no solid logical underpinning, and the result is that readers who agree on the rhythm of a poem (as shown by their identical readings) more often than not disagree about its scansion.

| (1) First as | (2) I am | (3) his kins- | (4) man and | (5) his subject |

Here is a line of iambic pentameter verse from Macbeth, scanned in the usual way. It is more "irregular" than average
Time and Stress in English Verse

Shakespearean verse, but it represents the sort of difficulties the foot scansionist frequently has to wrestle with. Two of the five feet are iambic, No. 1 is a trochee, No. 4 a pyrrhic, No. 5 an amphibrach. Let us examine the function of the bars. In Nos. 2 and 3 the stress precedes the next bar; in No. 1 an unstressed syllable precedes the bar; in No. 5 a stress is not adjacent to a bar at either end. Evidently, then, the bars do not mark stress. Nor do they mark isochronous intervals (i.e., sensibly equal time periods) for these are defined, and can only be defined, by the stresses of the line. (For it is only between metrical stresses that any measurements can be determined in a line of verse, just as it is only between hammer blows that a carpenter’s rhythmic motion can be measured in the driving of a nail.) But here the distance from the first stress to the second (first to am) covers two feet, whereas the distance from the second to the third (am to kins) covers only one foot. Furthermore, foot 5 is longer by the time of at least one short syllable than any other foot in the line. Nor do the bars mark sense sections or syntactic groupings, for his kins and man and are surely neither of these.

A foot, we must conclude then, is not a section beginning with a stress, nor a section ending with a stress, nor an isochronous interval, nor a sense section, nor a syntactic grouping. Just what it is nobody can tell. A series of syllables such as “a peck of apples” can be legitimately scanned in feet as:

(1)  A peck  of ap  ples (2 iambs and a “redundant” syllable left over)

(2)  A peck of  ap ples (2 trochees with the redundant syllable moved to the other end)

(3)  A peck  of ap ples (an iamb plus an amphibrach)

(4)  A peck of  ap ples (amphibrach plus trochee)
Traditional Scansion

We observe that the bars can be placed between any two syllables, so that a foot consists of any combination of syllables you care to select; also that the rhythm remains the same no matter what kind of foot the syllables happen to belong to in one of the various groupings. The bars and foot-names here are meaningless and therefore functionless. The macrons do mark stresses and are the only active ingredient in the apparatus. It is sometimes argued that varieties of grouping such as those just shown are not really a disadvantage, since, no matter how you juggle bars and feet, you can always recognize the correct number of stresses in the line. The answer is that if the stresses are all we want, they can be counted more easily and simply without using foot machinery at all. Just read and listen. Normal men, women, and children actually read and speak verses by measuring from stress to stress, i.e., in the only way the structure of the language allows them to do. In the process they observe real divisions but are unconcerned, on either the conscious or unconscious levels, with divisions analogous to those set up on paper as feet, unless the latter happen to coincide with the real ones.

Colleagues in various parts of the country have kindly assisted in the following experiment. Each reader was given a copy of an arranged series of seventeen verse passages, covering a wide range of metrical patterns, from simple to intricate. Readers were asked simply to scan the passages, adding any explanations which seemed necessary. No one was told in advance the object of the experiment. The resultant data, as far as agreement is concerned, can only be described as chaos. Some passages proved generally baffling. Outside of decasyllabic blank verse, or likewise obvious configurations, there were few duplicate scansion. My collaborators were all skillful readers of poetry, rhythm and all, and their responses showed the ingenuity one would expect. Doubtless they would have agreed on the rhythm of every one of the passages. But when it came to analysis, they were all using an undefinable and indeterminable unit as a metrical measuring
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stick and thus could not be expected to emerge with similar, much less identical, conclusions. Here are a few samples of the analyses I received:

1. Little Robin Red-breast sat upon a tree
   (analysis: trochaic heptameter)

2. Little Robin Red-breast sat upon a tree
   (analysis: iambic hexameter)

3. Little Redbreast sat upon a tree
   (analysis: trochaic hexameter)

4. Little Robin Red-breast sat upon a tree
   (analysis: iambic pentameter with anacrusis)

Now these analyses were made by intelligent people who know poetry and read it well, and who are experienced manipulators of the foot system. Certainly they all read this test line in the same way; yet their collective evidence shows the verse to be both iambic and trochaic; worse yet, it is heptameter, hexameter, and pentameter at the same time. One may well ask of what value the foot system is in cases like this, where there can be no rational agreement on what feet are being used or how many feet are contained in the line of verse. We will have a good right to regard this sort of thing as sound analytical measurement on the day when a man can be five feet, six feet, and seven feet tall at the same time, and still be the same man. Users of the foot system, after a modicum of experience, do not encounter much difficulty in turning out scansion like the four just exhibited. The false simplicity of the system explains its
widespread use as well as its inadequacy. As an instrument of analysis it concerns only a fragment of rhythmic theory, and in dealing with this fragment it is inconsistent, sometimes misleading, and frequently useless.

From what has been shown, the reader can form an opinion of why Lanier decided to study verse structure by empirical methods. Poetry, after all, is language; it has a physical body, and if it has an anatomy it can also have a morphology. Learned authority is not enough; nowadays one does not study Hippocrates to discover cures for disease. Tradition too is backward-looking and irresponsible. But here is poetry itself inviting open inspection. So Lanier thought, and so he set out to study rhythm, placing reliance on his thorough musical training, on his control of scientific method, on the clear evidence of his senses, and on the reasoning powers of his mind. There are worse ways of studying rhythm.

LANIER'S APPROACH

The following pages do not contain a comprehensive review of The Science of English Verse. The aim is only to examine Lanier's fundamental theory of rhythm. What I chiefly want to show is that Lanier propounds foundation principles without which a balanced understanding of verse rhythm is impossible. These principles are by no means widely understood or valued at the present time, and until textbooks and teachers catch up to Lanier's ideas on this subject, they will continue to labor under a considerable disadvantage.

Explaining Lanier more clearly than he explained himself is a difficult and hazardous undertaking. In the attempt I am using complete freedom in presenting his principles in my own language and methods and illustrations. I have tried everywhere to be clear about what belongs to Lanier and what belongs to my own commentary. The general policy has been to mention Lanier
explicitly whenever directly presenting or dealing with his material. Considerable portions of my own criticism are not strictly necessary to a narrow elucidation of Lanier, but they will, I hope, prove useful in showing the significance or shortcomings of his work as these appear in the light of what has been learned, partly under his influence, since his book appeared. It is my hope, too, that the extension comments will prove valuable in their own right as contributions to the study of prosody.

As already mentioned, Lanier worked experimentally. Despite its errors, his book is a landmark in the history of American prosody, not only because of its actual findings but because of its significant orientation in the field. While others were haggling over views, claims, and opinions, Lanier was supplying verifiable or refutable demonstrations. Nowadays when linguistic phonologists are arousing so much interest with their investigations of juncture and intonation (including pitch and stress), few among us are aware that Lanier was studying pitch, stress, timbre, and duration half a century before linguistic science, as we now understand it, was even in its infancy.

In his first chapter Lanier declares that verse, for purposes of prosody, must be recognized as a *phenomenon of sound*. And this constantly holds true, he points out, even when the reading or reciting is done silently to oneself, for the eye, in traveling over the print, not only flashes the meaning of the words to the intelligence, but also transmits their sound to the auditory imagination, so that in effect the ear hears the verses just as if they were being read aloud. This familiar fact of experience I suppose nobody could doubt. Lanier now sets up a concise and exhaustive classification. Sounds may be studied with reference to four and only four particulars. We may observe:

1. How long a sound lasts (duration)
2. How loud a sound is (intensity)
Lanier's Approach (3) How high or low a sound is (pitch)

(4) Of what component sounds a given sound is made up (timbre, tone color, *Klangfarbe*).

Observation of these elements, then, constitutes for Lanier the *science* of verse as opposed to those other aspects of it (value, meaning, beauty, and the like) which are not susceptible of scientific analysis. Of the categories above, Nos. (2) and (3) need little comment. Everyone is acquainted with the difference between loud and soft tones in obvious contrasts, as between a quietly spoken greeting and an excited shout or scream, or between softer and louder speech on radio or television as one turns the volume-control knob. Less evident, but still easily perceived, are the contrasts in relative loudness among words or syllables in an ordinary spoken sentence. In the request "Give the book to John," for instance, *John* is plainly the loudest word, if the speaker means something like "Give the book to John, not to William." By comparison it may be noted that *give* and *book* are enunciated less loudly (that is, with less stress or accent) and that *the* and *to* are the softest syllables of all. Dictionaries usually recognize three relative levels of intensity in dealing with ordinary word accent. The word *satisfy*, for instance, has one loudest syllable (*sat*), a less loud one (*fy*), and a least loud one (*is*). *Rêbel* (as noun) and *rebél* (as verb) offer an interesting contrast in accentuation and incidentally illustrate one of the many ways in which accent operates as a determinant of meaning.

Today structural linguistics usually recognizes four degrees of stress: primary, or strongest ('); secondary, or less strong (^); tertiary, or weak (); and finally (since no syllables are entirely without stress, however slight) there is zero level, marked by (-) or simply unmarked. Zero level denotes syllables we normally speak of as unstressed. All four degrees are clear in this example:

> In the garden we *saw a donkey*
Turning now to matters of pitch, we might begin by recalling how plain are differences of pitch in music when we compare the voice range of a bass singer with that of a soprano, or strike "middle C" on the piano as compared with striking "C" two or three octaves higher on the keyboard. In the opening phrase "Oh say, can you see," of the national anthem, say occurs on a low note and see is higher by a full octave. Gradations of pitch in speech are not readily apparent but are nevertheless easily observed. Take for example this sentence: "Did you say you were coming?" If the speaker intends no expression of impatience or irony but merely wishes information, the final word coming will normally have the highest pitch in the sentence, and its final syllable ing is likely to be pitched slightly higher than the com preceding it. In contrast, the opening word Did in this sentence pattern is most likely to have the lowest pitch of all the syllables used. Or consider the intonation of the word plenty in this brief specimen of dialogue: "Did you say plenty?"—"Yes, I said plenty." In the question, syllable ty is higher in pitch than syllable plen; in the answer ty is lower.

Linguists recognize four gradations of pitch and point out their value as semantic determinants. We are interested in them here, however, only as phonetic realities. Horizontal lines are often used to graph relative pitch levels, but plain numbers can also be employed as markers: (1) for highest pitch, (2) for less high, (3) for low, and (4) for lowest.

\[
\begin{array}{ccccccc}
(3) & (3) & (2) & (3) & (3) & (1) & (4) & (4) & (4) \\
\end{array}
\]

In the morning the rain was falling

Of course other pitch patterns can be used in speaking this sentence, just as other accentual patterns are employable in the example preceding; I have merely selected one natural idiomatic scheme of pronunciation to use as a convenient example.

Returning now to Lanier's four categories, duration (1), though obvious in the long and short blasts of a whistle, is not so
easily observed in speech, whose syllables normally move along at the rate of two or three up to five or six per second—rather fast to be measured on the wing without some practice or at least very careful observation. The difficulty of detecting syllabic timing, in fact, is the main reason why its nature and reality have been so often objects of controversy. Since Lanier's time, however, it has been well established by the work of many trained observers, as well as by accurate mechanical tests, that speech syllables vary in length and do so in simple and recognizable ways. In our earlier section “Traditional Scansion,” the preparatory experiment demonstrates one of the ways in which we naturally and unconsciously arrange our speech syllables in simple time ratios. (The reader will recall the comparison of the phrases “men were there” and “women were there,” in which the words men and women occupy the same amount of time.)

In timbre (4) we deal with the differences that distinguish the quality of one voice from another, or of one instrument from another, or of one typical speech sound from another, as in the case of the vowels a, e, o, which are plainly different even when spoken on the same pitch. Or compare the sounds represented by the phonetic symbols [æ, u, i, o, ɛ]. These distinctions of timbre had been scientifically elucidated prior to Lanier's investigation, and he had studied them in the pages of Helmholtz and others. We rightly infer from all this that The Science of English Verse is not confined to rhythm alone, as often supposed, but interprets prosody as a study of verse sounds in the widest possible sense.

I have nowhere seen Lanier's four categories augmented or plausibly challenged. On this subterranean level his work appears to rest on a solidly established foundation.

Commentary (phonetics): Ours is a highly literate society. Unlike our remote ancestors and primitive contemporaries, we usually experience poetry by the refined expedient of reading it
silently from a printed page. We see it actively but relegate our hearing of it to the auditory imagination. As with poetry, so usually with metrical analysis. Ask a person about the rhythm of a poem and he is very likely to produce a pencil and subject his verses, in silence, to a searching ocular scrutiny. But poetry ultimately is speech, speech is sound, and sound must be studied by the ear and its rhythms understood in terms of measured movement and dynamic variation. Otherwise speech rhythm remains theoretically unintelligible.

The continuum of sound in verse is therefore our prime concern throughout this study. In fact it is with a few exceptions our only concern, and the restriction deserves, I think, a word of explanation. In the broader study of metrics, meaning (semantic values), tone, syntactic groupings, and various other aspects of phrasing are important matters. Meaning, for instance, continually influences stress and duration. But while such phenomena condition or affect rhythm in a number of ways, they are not integral parts of rhythm per se. They are variables, and their rôle in verse structure does not alter the foundation laws of stress and measured interval. If anyone taps out with his fingers the syllabic sequence in any portion of speech, the fundamental rhythm is all there.

VERSE AND MUSIC

Lanier next proceeds to explain the formal analogy between verse and music, in the light of which many of his later ideas are elucidated. Since music, like verse, is a phenomenon of sound, and since sound can be studied only in reference to its four properties of duration, intensity, pitch, and timbre, Lanier states flatly that “there is absolutely no difference between the sound relations used in music and those used in verse.” (Quotation from p. 41, The Science of English Verse. Page references here and elsewhere are to Vol. II of the Centennial Edition.)
The word “absolutely” is unnecessary and unfortunate, for it has thrown the proposition open to cavilers. What Lanier means is clear enough. He is talking theoretically about the sound relations of the two arts, not about the concrete sounds of actual performance. He makes this plain (loc. cit.): “If this be true—if the sound relations of music and verse are the same—we are necessarily forced to look for the difference between the two arts in the nature of the sounds themselves with which they deal. Here, indeed, the difference lies.” Lanier was not one to be trapped into a clumsy morphological confusion in a distinction of this sort. He was well aware that a man does not sing in exactly the same way as he speaks. He only asserts that the performances of singing and speaking operate according to identical basic principles. In reciting the text of a song as poetry, for example, we do not use the same pitch curve as in rendering the melody, but in both situations we do use the voice and so have to deal with the abstract principle of pitch.

Poetry and music, both arts of sound, are indeed analogous in principle to a high degree and are therefore mutually illuminating. Verse has stress, measured intervals, pitch variation, and changes of timbre. So has music. The poetic measure, in fact, is an essential counterpart of the musical measure. And, as Lanier failed to note, song music furnishes more pointed examples of this parallelism than does instrumental, for the rhythms of song music are shaped partly by the direct influence of language itself.

It is helpful here to remember that only in the later, more mature phases of human culture (not only among the Greeks, but elsewhere likewise) has poetry divorced itself from music and assumed the character of a separate art. In traditional folksong to this day, verbal texts and melody, having developed as a unit in the consciousness of the singers, often come close to being identical rhythmic twins. Try singing the following ballad.
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stanza. Then speak the words to the time of the music. Finally read the stanza naturally as verse and then draw your own conclusions about rhythmic resemblance.

A natural reading of the verses (as poetry, not music) runs somewhat as follows:

(Time signature: $3\over 4$)

For direct comparison, I have shown the syllabic time values here by musical notation as well as by fractions. The eighth-note ($\cdot$) represents the unit of the short syllable, the quarter-note (\(\ddot{\text{.}}\)) the long syllable.

The identity of principle underlying the rhythms of language and melody will be evident from a careful inspection and audible performance of the stanza above. Notice that in both melody and verses (1) the accented syllables are identical; (2) the measures established by these stresses are identical, the only difference being that those of the tune are in the compound form;
the syllables are arranged in regular time patterns. One also notices that the four melodic phrases and the four lines of verse coincide. In short, except for matters of pitch and tempo, the poetic stanza and the melody are virtually structural twins.

In metrical study, however, the analogy of verse and music is something to guard against as well as to profit by, for poetry is not music. Lanier, of course, understood this, as his practice everywhere shows. He was not, as unobservant critics have sometimes whimsically alleged, attempting to turn poetry into music. His worst mistake, as we shall see, lay ironically in not perceiving the full value and justice of his musical parallels.

LANIER'S THEORY

Chapter I, just reviewed, Lanier regards as introductory. He leads us now into Part I of the text proper. This part ("The Rhythms of English Verse") occupies 146 pages and contains the real constructive work, the inner bone and marrow, of the treatise. Parts II and III, on "Tunes and Colors," though instructive and not always commonplace, assert little that an average reader would not readily comprehend and believe. Part I is the pièce de résistance.

Here we begin with the commonly understood conception of rhythm as a recognizably regular series of blows or impacts of some kind. When these simply run along in an undifferentiated series (as in the ticking of a clock) we have what the author calls primary rhythm, coining a term to meet his need. Primary rhythm is called by some authorities inorganic rhythm, meaning that its strokes are not in any way grouped or sectionized. But the human mind, in its effort to understand and control rhythm, has a powerful unconscious tendency to organize these primary units into groups or segments—an impulse so strong that, as Lanier says, the imagination will even effect such a
grouping when the sounds themselves do not present the means for it. If you ask a man, for example, to march or beat time to the playing of the organ, though the organist does nothing to accent his notes, the man’s steps or strokes will naturally coincide with the notes that would be normally accented in singing. In language the mind effects such groupings simultaneously in connection with accent, and we arrive here at the second integration in the ascending scale: i.e., the grouping of syllabic material into measures established by stresses, the stresses designating the points in order where each measure stops and the next begins. This process of accentual grouping establishes what Lanier calls secondary rhythm. Secondary rhythm means the same thing as verse rhythm in ordinary discourse, as when we speak of pentameter, hexameter, septenary, and the like. Take for example the line:

Ex. 9. When Phoebus had melted the shackles of ice

In terms of secondary rhythm, this is a four-measure (or tetrameter) verse, so divided by its regular metrical accents or stresses. Inside the measures the primary rhythm is triple, being so declared by the three beats, or time units, characteristic of the measures.

Now here the triple movement is easily recognized because of the almost perfect coincidence of beats and syllables. If all poetry were so constructed, the analysis of measure rhythm would be utterly simple—you could just count syllables. But this sort of coincidence is far from usual. In each measure of verse there exists a basic triple or duple pattern over which the actual syllables are distributed in various ways. This coördination between time basis and syllabic superstructure is chiefly what makes real analysis the intricate thing that it sometimes is. For example, the familiar line
Lanier’s Theory

Ex. 10. The stag at eve had drunk his fill shows dissyllabic measures in triple time.

Ex. 11. Loud sang the souls of the jolly jolly mariners exhibits trisyllabic measures in duple time. In

Ex. 12. Kentish Sir Byng stood for his king some syllables occupy all three time units of the triple measures, some only one. In

Ex. 13. One a penny, two a penny, hot cross buns which is in duple rhythm, some syllables cover one time unit, others cover two. And so forth. Language being a flexible and various thing, there are innumerable ways in which a poet may vary his syllabic distribution and still make the metrical intention so clear that a schoolchild can read the verses in proper rhythm.

“All secondary rhythm,” Lanier summarizes (p. 53), “necessarily presupposes a primary rhythm which depends upon considerations of time or duration: in other words, rhythm of any sort is impossible except through the coördination of time.” Here in a few words is the central principle of Lanier’s theory. In more familiar language, what the theorist means is that rhythm is neither performable nor conceivable without measured time; that every line of verse is divided into a number of sensibly equal time periods marked by stress; that the time periods so marked are themselves subdivided into equal segments of time (beats) by their syllabic configuration. And this, I would add, is the foundation of verse rhythm. There is much more in the total account, but the rest is superstructure and elaboration.
To some minds Lanier's elucidation of primary rhythm, which we have just reviewed, is clear and self-evident. Others find it flatly unacceptable. The most characteristic response appears to be somewhere between. It is made by a reader who is rather naturally surprised on being told that, in his occasional readings of poetry, he has been accomplishing the apparent miracle of timing syllables in mathematical patterns, and more astonishing yet, without knowing that he was doing it. Such a feat, perhaps, seems hardly possible. He realizes that there must be some sort of coördination between syllables and time, but Lanier's proposals and demonstrations do not strike him as convincing, and his mind harbors some unanswered, perhaps formidable, questions. Throughout the remainder of the study, the main effort will be to answer such questions as far as experience has enabled the writer to divine what they are. For the interesting thing is that Lanier, in his central principle, is right, and the consensus of modern prosody is solidly behind him.

One of the most natural, perhaps inevitable, questions to arise in a reader's mind is why primary rhythm seems so recondite and inscrutable. Since the metrical stresses are so easily perceived by everyone, why is primary rhythm not likewise easily detectable? Why should it be a controversial matter? Why should anyone be mystified? The answer is not difficult. Stresses are obvious to the ear; beats within the measure are very far from obvious, being embedded far more deeply in the unconscious and involuntary part of the mind, this being evidently as true of poets as it is of their readers. It is true that something depends on how much preliminary training an observer happens to have had. If you ask a musically untrained person to clap his hands or set down his feet to the rhythm of music, he can do it with no effort. Listeners sometimes do it unconsciously. Good dancers often know nothing whatever about musical theory. Chimpanzees can be trained to dance in time with music, as I have myself witnessed. In contrast, if you ask a musically un-
trained person to tell you the time signature (i.e., syllabic rhythm) of a musical composition to which he is listening, he will be at a complete loss, though an experienced musician, after listening for a few seconds, can diagnose the rhythm and give you the answer at once. The case is roughly similar with syllabic time in verse. I have always found, in teaching prosody to undergraduates, that the music majors make short work of syllabic rhythm, while those innocent of theoretical music, after they have been persuaded to listen to (instead of looking at) verses, usually have difficulty in realizing and analyzing what they hear in terms of syllabic organization. It is totally unfamiliar territory to many. Paull Franklin Baum puts the matter in this way:

... the basis of English meter is dual; time and stress are inextricable. ... The warp of the metrical fabric is time; stress is the woof. And from the surface, of course, only the woof is visible. Moreover, the poet’s point of view in composing and generally the reader’s point of view in reading has always been that of the “stresser.” No poet ever wrote to a metronome accompaniment; extremely few readers are fully conscious—few can be, from the nature of our human sense of time—of the temporal rhythm that underlies verse. Thus it has come about, historically, that modern English verse is written and regarded as a matter of stress only, because to the superficial view stress is predominant. Probably the truth is that most poets compose verse with the ideal metrical scheme definitely in mind and trust (as they well may) to their rhythmic instinct for the rest. Whatever device they employ for keeping the pattern always before them, they do keep it distinctly before them—except perhaps in the simpler measures which run easily in the ear—and build from it as from a scaffolding. They may not know and may not need to know that this metrical scheme does itself involve equal time units as well as equal stresses. (The Principles of English Versification, pp. 66–67.)

William Thomson, no one would dispute, is the greatest prosodist who has written in the English language. His criticism of Lanier is severe, as with everyone else, pointing out errors, where they exist, with keen discernment (and I would also say, with unnecessary asperity). Yet Thomson is at one with Lanier
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on the foundation of rhythmic structure in verse. His statement is so cogent and authoritative that I quote it in full. (Thomson's sequences of numbers are abstract schematic designations of relative durations within equal measures. His point is that the ear cannot recognize the equality of the pairs in the first series \([2,3 / 4,1, \text{etc.}]\) because the ratios are too complex, whereas it can do so easily in the second series \([2,1 / 1,2, \text{etc.}]\) because the ratios are simple enough to represent those of real syllables in triple-time verse. He cannot use actual verses in making the comparison, since, in the very nature of the case, no real verse corresponding to the first series could be found or invented. The test indicates the limits of rhythmic perception, but, more importantly, it shows the incapacity of the rhythmic sense to grasp the boundaries of measures without grasping the durational ratios of their components.)

If an experimenter take the series \(2,3 / 4,1 \quad 1,4 / 4,1 \quad 2,3\) and practice it, sedulously tapping out each quantity till he is able to produce the whole with mechanical precision—for its rhythm is too complicated to be produced naturally by the ear—he will search the world in vain to find another person capable of perceiving the equality of the pairs, obvious as it is to the arithmetical understanding. And the reason is, as all experiment shows, that the ear only normally perceives the duration of sums if the durations of constituents are in specifiable ratios of the simplest possible description, as in \(2,1 / 1,2 / 1,2 / 1_3,1_3\).

Thus, wherever speech is imitable, or reproducible by oneself or others, the reason is not merely that the accents occur at equal or other mensurable intervals, but that the component sounds, or more precisely, their onsets, occur also at very simple intervals which are easily commensurable. And commensurability implies susceptibility of statement in words, or more briefly, in figures or other symbols. So far as I know, no living English prosodist [Lanier died in 1881; Thomson wrote in 1923] betrays any sign of being aware that organic rhythm in general is possible only when imposed on a sub-fabric of inorganic rhythm: that is to say, that periods or groups of syllables are only imitable and measurable when their constituents are also imitable and measurable. Yet this is no fanciful theory. It is not a "view" nor an "opinion." It is a generalization of facts within the reach of all. (The Rhythm of Speech, p. 83.)
Though we have already made acquaintance with the measure and observed it in action on numerous occasions, we have not yet subjected it to a systematic and detailed scrutiny. It has been my continual experience that students of this subject are likely to encounter real difficulties in avoiding confusion between the structure of the measure and that of the familiar foot. For this reason, and because the measure is the key concept of metrical structure, we now proceed to examine it with some thoroughness. And at this point it will be advantageous to abandon Lanier's terms secondary and primary rhythm. They were useful to him because they fitted the development of his exposition. But they are poor terms for general use, since they have never acquired currency and carry, as we shall see later, some unnecessary and misleading implications. Let us therefore use in their place a pair of terms more familiar and self-explanatory. Instead of "secondary rhythm," we shall employ the term verse rhythm, meaning the accentual rhythm as we ordinarily understand it in pentameter (five-stress verse), tetrameter (four-stress verse) and so on. And instead of "primary rhythm," we shall adopt the term measure rhythm, meaning the rhythm established within the measure by its syllables.

Before we consider the mechanics of measure rhythm, certain psychological and physiological factors, almost invariably ignored by prosodists, claim our attention. The study of rhythm, it may fairly be said, begins with the recognition of the rhythmic faculty, i.e., the ability of the mind to measure sensibly equal periods of time, and to do this on the unconscious level as well as on the conscious. That such a faculty exists is a matter of common observation. Without it no human being could perform what we know as music or the dance, nor could any person walk or breathe in what we know as a natural manner. To be sure, we can voluntarily control our walking or breathing, using any
artificial pattern we choose, but as soon as the conscious effort is relaxed, the inner mental metronome immediately takes over and restores the natural rhythm. In the heartbeat we note this physiological principle operating on a wholly involuntary level. It is a most significant matter for the study of prosody that the mind is demonstrably able to control rhythm generally in all activities, and that a human body is created with an inescapable tendency to perform its actions rhythmically, whether on the involuntary or conscious levels. Without taking these matters into account, one might well suppose that a random gathering of syllables into a measure would be the easy way—you could just do it carelessly—whereas fitting them in according to a mathematical scheme would be more difficult, would take more attention and thought because it requires a strict orderly organization. The exact reverse is the case. Placing the syllables in accord with a scheme of measure rhythm is easy to the point of being virtually inescapable, while working them in in any other way is a feat like walking a tightrope. The reason is not obscure. Rhythm, perceived physiologically, is a natural economy. Our brains and bodies obey its law because its law represents the line of least resistance, and does so by long odds. Anyone disinclined to believe this statement might observe the call of the whippoorwill, the wing-beat of a gull, a cow chewing her cud, a dog scratching, a man sawing a plank or milking a cow or rowing a boat, or any other living creature performing any repeated physical movement. The doubter, if still doubting, might try walking one mile unrhythmically, that is, in such fashion that each step will occupy a different amount of time from the one preceding it. If not stopped by the police, the experimenter will stop before long of his own accord, since half a dozen steps will suffice to convince him which mode of walking is easier than the other. It can be said with truth that our bodily movements, including
those of the vocal organs, are so profoundly coördinated by
nature that we have to behave unnaturally in order to disco-
ordinate them. It would be, in short, an amazing physiological
anomaly if either verse rhythm or measure rhythm failed to
exist in poetry, for the vocal organs are under the control of the
same brain and nervous system as are all other parts of the body.
What the mental metronome does as one reads or speaks a line
of verse is to measure from one stress to the next; and what it
does between stresses is to measure equal or commensurate inter-
vals from one syllabic onset to the next so as to place the sylla-
bles in a frame of equal time units. What must carefully be ob-
served here too is that syllables are separately distinguishable by
the ear because each syllable, in effect, strikes an audible blow,
just as a pianist strikes a blow each time his fingers sound a note.
It is the ordered succession of syllabic blows or impacts that
enables a reader's rhythmic sense to express, or his ear to per-
ceive, the time pattern in any measure of poetry.

Some find it hard to believe that the human mind, working on
the unconscious or instinctive or reflexive level, is able to meas-
ure time with the precision that measure rhythm actually re-
quires. But one need only recall that such simple creatures as in-
sects and humming birds vibrate their wings with such in-
credible exactness as to produce a tone whose pitch is as even
and uniform as that of a musical instrument. Actually the mind
can make very precise divisions of time. No detectable differ-
ence exists between, say, the intervals of a ticking clock and a
man's imitation of them. This degree of precision, when it comes
to the rhythmic arts, is ample, to say the least.

Definition: The measure is a segment of verse which begins
with a stress and continues to the stress following. Or as some-
one has said, it is the total rhythmic material between two
stresses and including the first. The second definition is slightly
the better, in view of the fact that rhythmic material includes measures empty of syllables as well as measures partially or wholly filled with them.

Description: The measure used in verse is the exact counterpart of that used in music. It is an efficient instrument, needless to say, not because it has been used in music, but because it is the most rational and consistent device so far invented for graphically recording sounds in connection with the facts of their rhythm. For this reason, it serves well in music, and by the same token, serves well in verse.

The measure differs from the foot in three main respects: (1) it is definable; (2) it always begins with a metrical stress; (3) it includes all rhythmic material, leaving no anomalies or exceptions. (Someone has rightly called the foot an unsuccessful attempt to discover the measure.)

A measure is divided into two or more equal units of time, the term equal meaning equal as the rhythmic faculty understands it. These equal units are called beats. If a measure contains three beats, it is in triple time or triple rhythm. If it contains two beats, it is in duple time or duple rhythm. Quadruple time is merely a multiple form of duple, but the term is sometimes used to describe duple-time measures containing four syllables.

Before examining the examples to follow, a word concerning their notation is in order. Arithmetic, or its equivalent in musical notation, can be used to score either a simplified typical reading or any individual reading one might care to record, no matter how it might vary from the presumable norm. Since we are concerned only with fundamental laws, I have recorded my examples (here and elsewhere) as I suppose normal people would ordinarily read them. Should the reader, in a given example, fail to recognize an exact duplicate of his own reading, there is no cause for alarm. The rhythm will not be involved; the differences will be those of small syllabic distributions which neces-
The Measure

sarily must vary from reader to reader. They correspond to the renderings of different musicians, each playing from the same score according to his own feeling and interpretation. Individual variations, however great, follow the basic laws inexorably, as brown, or blue, or hazel eyes exercise identical functions of sight.

Most English poetry is in triple time, doubtless because this movement is most common in normal speech. The following stanza illustrates the characteristic syllabifications of measures in triple time.

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<td>The</td>
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<td></td>
<td>sun came</td>
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<td></td>
<td>1 1 1 1 1 1 1 1</td>
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<td>2</td>
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<tr>
<td></td>
<td>sea came</td>
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<td>he shone</td>
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<td>4</td>
<td>Went</td>
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<tr>
<td></td>
<td>down in-</td>
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<td>2</td>
<td>1</td>
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</tbody>
</table>

We observe:

Line 2, measure 1 (Out of the): trisyllabic, three short syllables, one for each beat. Line 1, measure 1 (sun came): dissyllabic, the time of the measure equally divided between the two syllables, producing a duplet, a figure in which two syllables occupy the time of three beats. Line 4, measure 1 (down in): dissyllabic, the first syllable covering the first two beats, the second syllable the third. Line 1, measure 4 (left): monosyllabic, containing one syllable which occupies two beats, leaving the third silent. Line 2, measure 4: contains no syllables except the unaccented and preceding the first measure of line 3; two of the three beats are silent, but all are rhythmically integral in the stanza structure. A wholly or partially silent “rest measure” of
this sort must not be confused with a cesura or rhetorical pause. If line 2 is read without observing the full value of this rest measure, the rhythmic balance of the stanza is destroyed. The effect can easily be tested by reading the stanza with no break whatever in time between *he* and *And*. This is a structural feature of Common Meter which prosody has seldom taken into account. The same principle holds true with line 4 in relation to the beginning line of a following stanza. In line 1, *The* is anacrustic; i.e., it corresponds to the up-beat at the beginning of a musical composition. (A measure never begins except with a metrical stress.) When anacrusis occurs in the second, third, and fourth lines, however, it merely completes the time of the fourth measure in the line preceding. This stanza can, in fact, be represented as a couplet of septenaries, as was sometimes done by the early printers of traditional ballads.

```
The
  1       | 1 1 1/2 1 2 | 1 1 1/2 1 2 | 1 1 1/2 1 2 | 2 1 1/2 1 2 | 2 1

And
  1       | 1 1 1/2 1 2 | 1 1 1/2 1 2 | 1 1 1/2 1 2 | 2 1 1/2 1 2 | 2 1
```

Duple time occurs most commonly in song-like poetry. The typical syllabifications of its measures appear in the following nursery rime.

```
1. | (1) | (2) | (3) | (4)
  | Baa baa black sheep, | have you any wool |
  | 2 2 1 1 1 1 | 2 1

2. | Yes Sir, yes Sir, three bags full |
  | 2 2 2 2 2 2 | 2 (2)
```
We notice:

Line 1, measure 1: two syllables cover four beats. Line 1 measure 3: four syllables are fitted to all four beats. Line 3, measure 1: one syllable covers the first two beats (or half measure) with one syllable for each of the remaining two beats. Line 2, measure 4: one syllable covers the first two beats, while the remaining two are vacant of syllables.

The following specimens show how measures form the natural divisions of some of the commoner verse patterns. These examples are in triple time unless specifically labeled as duple. Syllabic labels (trisyllabic, dissyllabic, etc.) of course refer to the characteristic or prevailing pattern in the verse. Normally the patterns are not uniform but somewhat varied, as they must be if they are to sound like natural speech. A syllabic pattern repeated exactly, measure after measure, would give a contrived and artificial effect.

Two-stress verse (dimeter). Trisyllabic.

| Take her up | tenderly |
| 1 1 1 | 1 1 1 |
| Lift her with | care |
| 1 1 1 | 2 (1) |
| Fashioned so | slenderly |
| 1 1 1 | 1 1 1 |
| Young and so | fair |
| 1 1 1 | 1 1 1 | 2 (1) |
Time and Stress in English Verse

Three-stress verse (trimeter) in four measures. Trisyllabic.

The leaves they were crisped and sere
1 1 1 1 1 1 1 1 1 (1) 1 1 (2)

Three-stress verse (trimeter) in four measures. Dissyllabic.
(Note that the lines do not follow one another in unbroken continuity. The terminal rest measures, as in the trisyllabic model above, are rhythmically integral.)

When I was one and twenty
1 2 1 1 1 1 1 1 1 1 (1) 1 (2)

I heard a wise man say
1 2 1 1 1 1 1 1 (1) 1 (1 1/2)

Give crowns and pounds and guineas
1 2 1 1 1 1 1 1 1 1 (2)

But not your heart a-way
1 2 1 1 1 1 1 1 1 1 (1) 1 (3)

Four-stress verse (tetrameter) in four measures. Trisyllabic.

The children were nestled all snug in their beds
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 (2)

While visions of sugar plums danced in their heads
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2

Four-stress verse in four measures. Dissyllabic.

The sun that brief December day
1 1 1 1 1 1 1 1 1 1 1 (1) 1 1 1 1 (1 1/2)

Rose cheerless over hills of gray
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 (2)
The Measure

Four-stress verse with variable syllabication. Duple time.

\[
\begin{array}{c|c|c|c|c|c}
\text{Anyone} & \text{lived in a} & \text{pretty how} & \text{town} \\
1 & 1 & 2 & 2 & 1 & 1 & 2 & 2
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c}
\text{With} & \text{up so} & \text{floating} & \text{many bells} & \text{down} \\
2 & 3 & 1 & 1 & 1 & 2 & 2
\end{array}
\]

Five-stress verse (pentameter). Dissyllabic. Note the quadruplet (four beats in the time of three) in third measure of second line. (Blank verse can be read in six-measure patterns as well as in the manner shown here.)

\[
\begin{array}{c|c|c|c|c|c|c}
\text{Love} & \text{alters} & \text{not with} & \text{his brief} & \text{hours and} & \text{weeks} \\
2 & 1 & 1 & 2 & 1 & 1 & 2
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c}
\text{But} & \text{bears it} & \text{out} & \text{even to the} & \text{edge of} & \text{doom} \\
1 & 2 & 1 & 3 & 1 & 1 & 1 & 2 & 1 & 2
\end{array}
\]

Five-stress verse. Dissyllabic, with considerable flexibility. Note frequency of trisyllabic measures, the monosyllabic measure, and the quadruplet.

\[
\begin{array}{c|c|c|c|c|c|c}
\text{Fallen} & \text{cherub} & \text{to be} & \text{weak is} & \text{miserable} \\
1 & 1 & 1 & 1 & 1 & 1 & 1
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c}
\text{Doing or} & \text{suffering:} & \text{but of} & \text{this be} & \text{sure} \\
1 & 1 & 1 & 1 & 1 & 2 & 1 & 2
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c}
\text{To} & \text{do aught} & \text{good} & \text{never will} & \text{be our} & \text{task} \\
1 & 1 & 1 & 1 & 2 & 1 & 2
\end{array}
\]

Six-stress verse (hexameter) in six measures. Trisyllabic. Note mid-line cesura and terminal pause. These are not metrical rests but rhetorical pauses.

\[
\begin{array}{c|c|c|c|c|c|c|c|c}
\text{This is the} & \text{forest prim} & \text{eval the} & \text{murmuring} & \text{pines and the} & \text{hemlocks} \\
1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1
\end{array}
\]

\[
\begin{array}{c|c|c|c|c|c|c}
\text{1} & \frac{1}{2} & 1 & \frac{1}{2} & 1 & \frac{1}{2} & 1 & \frac{1}{2} & 1 & \frac{1}{2}
\end{array}
\]
### Six-stress verse in eight measures. Dissyllabic.

<table>
<thead>
<tr>
<th>I have seen</th>
<th>dawn and sunset on moor and windy hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 1 2 1 1 1 1</td>
<td>(1 1 ½ 1 ½ 1) 1 ½ 1 ½</td>
</tr>
</tbody>
</table>

| Coming in solemn beauty like slow old tunes of Spain |
|-------------|-----------------------------------------------|
| 1 1 1 1 2 1 1 | (1) 2 1 ½ 1 ½ 2 1 |

#### Seven-stress verse (heptameter, septenary) in eight measures. Trisyllabic with many variations.

| I must go down to the seas again to the lonely sea and the sky |
|-------------|-----------------------------------------------|
| 1 1 1 1 ½ ½ ½ 2 | 2 1 1 ½ ½ 3 |

| And all I ask is a tall ship and a star to steer her by |
|-------------|-----------------------------------------------|
| 1 2 1 1 ½ ½ 3 2 | 1 ½ 1 ½ 2 1 |

#### Seven-stress verse. Dissyllabic and quadrisyllabic. Duple time.

| Dirty British coaster with a salt-caked smoke stack |
|-------------|-----------------------------------------------|
| 1 1 1 1 1 1 1 2 | 2 2 2 2 |

| Butting through the channel in the mad March days |
|-------------|-----------------------------------------------|
| 1 1 1 1 1 1 1 1 | 2 2 2 2 |

#### Eight-stress verse (octameter). Dissyllabic.

| And the silken sad uncertain rustling of each velvet curtain |
|-------------|-----------------------------------------------|
| 2 1 1 ½ 1 ½ 1 ½ 2 1 | 2 1 1 ½ 1 ½ 2 1 2 1 |

| Thrilled me, filled me with fantastic terrors never felt before |
|-------------|-----------------------------------------------|
| 2 1 1 ½ 1 ½ 2 1 1 ½ 1 ½ 1 ½ 2 1 | 2 1 2 1 2 1 |

It should be noted that the readings shown above are invariably only in their basic rhythmic structure. Different readers, or the same reader in different moods or for different purposes of expression, would slightly vary the syllabic distribu-
The Measure

tions. For instance, the fifth and sixth measures of the first octameter line might well be syncopated in this effective and pleasing manner:

\[
\text{rustling of each} \\
2 \ 1 \ 1 \ 1 \ 1
\]

The question often arises as to why measure time must always be duple or triple. Are there no other kinds? The answer is that in duple and triple time the numerical relationships range between one and four, and that the mind is demonstrably incapable, for practical purposes of speech, of handling any greater complexity. Five-time occurs sporadically in prose (in short segments) but it is unlikely that anyone could compose acceptable sustained verse in this movement, for the usual and prevailing rhythms of speech seem to run against it. I have done some experimenting with the problem and find it possible to turn out mechanical fabrications like—

\[
\begin{array}{c|c|c|c}
\text{A} & \text{university} & \text{offers wonderful} & \text{opportunities} \\
1 & 1 \ 1 \ 1 \ 1 & 1 \ 1 \ 1 & 1 \ 1 \ 1 \ 1
\end{array}
\]

or—

\[
\begin{array}{c|c|c|c|c|c|c|c}
\text{The} & \text{boys riding} & \text{had} & \text{to} & \text{bear} & \text{many a} & \text{hardship} \\
1 & 2 \ 2 \ 1 & 2 \ 2 \ 1 & 2 \ 1 \ 1 \ 1 & 2 \ 2 & (1)
\end{array}
\]

—but such lines are at best doubtful *tours de force*. In the course of this metrical contortionism I found that meaning was obliged to play second fiddle to pattern. In fact, the task of discovering metrically employable words proved so difficult that continuing the train of thought into a following line seemed rather impractical. Moreover, one has to remain meter-conscious in order to recite such verses in a genuine five-movement. Spoken with free naturalness they tend to slip into more idiomatic triple or duple patterns:
Cecil Sharp (One Hundred English Folksongs, p. 20) prints an authentic folk-variant of the ballad Barbara Allan in five-time. The first two phrases run:

```
In Scotland I was born and bred, In Scotland I was dwelling
```

This rhythm in music is naturally in compound measures, the second accent falling on the third beat, and so there is perfect (albeit oblique) accentual coincidence of verse and melody, even though the music imposes syllabic durations (notably the elongation of I) that differ from those of the syllables as spoken. This ballad is easy to sing, just as five-time is not difficult to play in orchestral music; but when the verses are spoken apart from the tune, they feel at home only in their native three-time dissyllabic pattern:

```
In Scotland I was born and bred, In Scotland I was dwelling
```

The lesson to be drawn from these illustrations, I suppose, is that, while the language is readily adjustable to five-time in music, such is not the case with verse. At least, I have never encountered an English poem in quintuple rhythm.

SYLLABLE AND STRESS

What we call a syllable seemed like a fairly obvious unit of speech until investigators began trying to measure it and determine its bounds. It has turned out, on close inspection, to be
a rather subtle entity. Since phonation between syllables is so often continuous, the exact line of demarcation between them is hard to determine. This is even true of data secured by phonophotographic technique, some of whose manipulators are inclined to regard the syllable, mechanically speaking, as an unscientific unit. But the element of time involved in the zone of uncertainty is so infinitesimal as to be negligible for purposes of metrical study. We have dealt with syllables here as they appear real to the auditory consciousness. We can all agree, no doubt, that man is monosyllabic and mandrake disyllabic, and that somewhere between the point nasal of ma% and the vowel onset of drake one syllable stops and the other begins.

It is interesting to note, however, that in the plain auditory sense, the syllict (the blow or effective advent of a syllable) occurs not on an initial consonant but on the release of the vowel. For instance, the initial consonant stops in pack, back, tab, dab, call, gall, serve syllabically as mere points of departure for the free release of vocal attack on the a-vowels immediately following them. A less obvious case is presented by spirants (s, z), nasals (m, n), the lateral (l) and glides (r, w). After such consonants the junctures have a slight gliding quality, but here again, though the closure of the vocal organs is not complete, the consonant sound is comparatively slight and definitely preliminary to the true syllict, and the same can be said of consonantal combinations such as black, throw, and the like. A printing of Frost’s familiar line from Birches, if less intelligible visually, would be much closer to auditory (syllabic) reality if segmented as in the second line shown below.

I like to think some boy’s been swinging them
Il iket oth inks omeb oy’sb eensew ingth em

Professor Ada L. F. Snell (PMLA, XXXIII, 1918, and XXXIV, 1919) has reported some interesting figures, based on mechanical tests, of syllabic duration and its coördination with
stress. Assuming that her findings are trustworthy, we have here virtual proof that the average stressed syllable bears to the average unstressed syllable a durational ratio of almost exactly 2:1. The cerebral metronome in verse reads, on the average, about .6 of a second for a combination of stressed and unstressed syllables (as in a measure of blank verse), of which time about .4 of a second is occupied by the stressed element and about .2 by the unstressed. More precisely, the ratio of long to short syllables is .4 to .21. This ratio furnishes powerful corroboration of the sensory measurements made by Lanier and by other prosodists since his day. The conclusions of W. L. Schramm are like those of Snell. Working with kymographic data, he reports that the average stressed syllable is very close to twice as long as the average unstressed (Approaches to a Science of English Verse, University of Iowa Studies, No. 46, 1935). These figures, we note, represent mathematical averages. The performance of a given line of poetry, especially such a flexible structure as a line of blank verse, often departs considerably from the norm. Snell, for example, shows a phrase from Paradise Lost, II, 607, which contains great variation. The decimals represent fractions of a second.

In his criticism of Snell's study, and with particular reference to the above example, Paul1 Baum writes: "... when divergencies so great as this are both possible and pleasurable, the conclusion should be, not that the ear makes no recognition of the time, but that it is capable, by syncopation and substitution, of adjusting itself to a very great possibility of variation without losing hold of the rhythmic pattern. Looked at from one point of view, the extreme variations would appear to be irregularities and warrant the judgment that no element of duration exists as a principle of English verse; but from the
right point of view these variations mean only that the metrical
time unit is extraordinarily elastic while still remaining a unit;
that the ear is willing and able to pay very high for the variety
in uniformity which it requires." (The Principles of English
Versification, p. 61).

The general correlation between syllabic duration and stress
will be evident from the material we have just examined. But
stress is also coördinated with other elements as well. Stressing
a syllable means an effort to emphasize it, and in doing this a
speaker evidently tends to use all the resources at his command.
Not only is the volume increased but the speaker tends to
heighten the pitch besides prolonging the duration. W. L.
Schramm (op. cit.) reports from mechanical measurements that
"The average stressed syllable may be described as follows: a
syllable which has an intensity about four decibels greater than
that of either of the adjacent syllables, which is higher in pitch
than one of the adjacent syllables, and which is about twice as
long as either of the adjacent syllables." But while a strong
tendency exists in speech, whether prose or verse, to heighten
pitch in direct proportion to intensity of stress, the correlation
is by no means uniform. Nor is the usual tendency to lengthen
the time of stressed syllables uniform or dependable. The cor-
relation is notably liable to exception, for instance, in trisyllabic
verse in triple time, as this example will show:

Like the | leaves of the | forest when | summer is | green,
1 1 | 111 111 111 1 | 1 1 1 1 | 2

That | host with their | banners at | sunset were | seen
1 | 111 111 111 1 | 1 1 1 1 | 2

Accents, as we have seen many times, are the signal events
of verse rhythm, as of all language rhythm. As noted earlier,
stress in English speech is recognizable in four gradations, from
strongest to weakest. All these do service as metrical stresses, according to varying exigencies of context, though the stronger are usual and typical. In the lines below can be seen a few examples of how word accent and idiomatic phrasal accent coincide with metrical stress. In the first line, \( I \) furnishes a good instance of strong stress required by meaning. In the second line, the zero level of stress on \( o f \ the \) illustrates weak stress required by relative unimportance in phrasal structure. In general, the normal word accents and the metrical are the same.

\[
\text{I am the mountainy singer,}
\]

\[
\text{The voice of the peasant's dream}
\]

Nevertheless, a very important qualification to this rule must be made. Since verse, accentually speaking, is natural speech rhythm fitted into a rigid metrical frame, the allocation of stress within measures can never be uniform. There is, in fact, continual variation, and it is precisely this variety which saves metrical structure from intolerable repetition and monotony. One can read a line from Shakespeare in this mechanical fashion:

A. The quality of mercy is not strained

— _but of course no one interested in the line as poetry would ever do so. A normal, expressive rendering would run:

B. The quality of mercy is not strained

or perhaps—

C. The quality of mercy is not strained
Now we notice here that the second measure of lines B and C (ty of) does not begin with a strong stress, and at first glance a discrepancy may seem to exist between any such pattern and our definition of measure as always beginning with a stress. There is no discrepancy, however; we have here merely a natural and characteristic variation within established principle. Usually a measure begins with a strong stress—were this not true predominantly, no pattern of verse rhythm could be created or recognized. But speech rhythm is so variable that, in some instances, a weaker syllable (perhaps even zero stress) is certain to occupy the position where the metrical accent falls, and when this happens, the stress is felt (or supplied) subjectively, even though not expressed dynamically by the voice. Metrical stress, in other words, always necessarily begins a measure and follows a correctly-placed bar, but it is not declared with equal emphasis in all measures, the range running from (predominantly) strongest to (occasionally) weakest. This delicate and elusive matter may be summarized thus: (1) strong stress (primary or at least secondary) must prevailingly initiate measures or no verse rhythm is possible; (2) no uniform accentual coincidence of basic scheme and syllabic overlay is possible, for speech rhythm is too varied to allow it; (3) such mechanical versification would be a complete artistic failure even if it could be achieved.

The measure we have just examined presents an aspect of what is sometimes called the phenomenon of stress inversion. Other manifestations of it occur in the same set of lines and deserve close scrutiny. In line C, measure 4, the speaker prefers to emphasize not, with the result that the normal strong-weak syllabic order is actually reversed. In the fourth measure of line B, the speaker's feeling for metrical articulation is about equal to his urge for sense-expression, so that the stress on each syl-
lable is approximately equal. Such fluctuations simply produce variety. Under the irregularity of the superstructure, the foundation scheme remains unchanged and unaffected. And this is felt all the time, of course, in reading or speaking. The momentary aberration from the regular rhythmic pulse does not disturb the pulse itself, or our feeling of it, which is the same thing. As the verse moves along, scheme and syllabic dynamics remain in continual balanced counterpoise with each other. Neither strict meter nor free prose rhythm is sufficient in itself; but together they can produce metrical verse.

Despite a wide range of variation, an accentual system is normally very easy to perceive. In composing poetry the auditory imagination hears the regular succession of strokes as the syllables are arranged in combination. In hearing poetry spoken we learn the rhythm by direct mental imitation. In reading, the process is a little more devious—we must take the cues from the printed page—but with familiar forms, this becomes automatic: the visible shape of a sonnet or stanza at once sets the inner metronome in readiness and it swings into gear with the first or second measure.

An inexperienced reader, of course, may present an exception. Let us take a child, for instance, who reads this line at the beginning of a poem: "In beauty I am not a star." The immediate impression can easily be tetrameter: In / beauty / I am / not a / star. The child then proceeds to the second line, using the same scheme: There / are oth- / ers more / handsome by / far—but it is clumsy and unsatisfactory. He reflects a moment, tries it again, and emerges with the limerick rhythm: In / beauty I / am not a / star; There are / others more / handsome by / far. The remainder then goes easily: My / face I don't / mind it, For / I am be- / hind it; The / fellow in / front gets the / jar. What puzzled the youngster was his momentary (and of course unverbalized) uncertainty as to whether a strong stress on I
Musical Notation

or on am is coincident with the real rhythm of the poem, which, as we see, is trisyllabic, as opposed to the dissyllabic version first attempted. This little vignette of rhythmic experience (taken, by the way, from real life) shows with unusual clearness, I think, the way in which accents signal dynamic structure and how intimately they are coördinated with syllabic pattern.

MUSICAL NOTATION

An amazing ado has been made, first and last, over Lanier's use of musical notation. Critics have condemned his theory because the "methods of music" do not properly apply to verse. The reply is that notes employed only to designate time values are not music but only rudimentary arithmetic. Lanier's analysis is not dependent on this apparatus or on any particular apparatus. The graphic record of a theory is only bad when the theory itself is bad. A man could invent a different valid notational code with every passing day if any practical purpose could be served. The breves and macrons of the foot system will function perfectly in metrical notation if they are used to denote metrical realities. Lanier could have used ordinary numbers or any other convenient symbolic code. In his day (as in ours) English prosody had not been provided with any established vocabulary or technique of symbols. Lanier was faced with a practical problem. He made a sensible choice. Musical symbols were familiar to him, adequate for his purpose, and more likely to be recognizable to his readers than some collection of new ones freshly invented. The fact is that ordinary musical notation, with its corresponding terminology, remains in our own day the best-known method available for graphically measuring and recording the duration of sound in conjunction with its rhythm. The time-proven efficacy of this machinery in music, coupled with its international currency as an analytical system,
likewise recommends it. In modern metrical study it is the usual notation.

Being consistent in operation, musical notation is not hard to control with a little familiarity and practice. The heaviest demand likely to be made upon our mathematical faculties is the ability to count up to four.

We have not space here for a graduated exposition of musical notation, but I should like to exhibit a sample of how it operates and what sort of story it can tell. Let us use the symbol called an eighth-note $\text{\textgroove} \frac{2}{8}$ to represent the time value of each short syllable in the following verse. Measures 1 and 3, each containing three short syllables, thus contain three $\frac{1}{8}$ units and can be so represented in context as follows:

\[
\begin{array}{cccc}
(1) & (2) & (3) & (4) \\
\text{Some of the} & \text{men are} & \text{weary and} & \text{worn} \\
\end{array}
\]

Applying the same scale to measure 2, two-eighths or one-fourth value must be allowed to its long syllable \textit{men}.

\[
\begin{array}{cccc}
(1) & (2) & (3) & (4) \\
\text{Some of the} & \text{men are} & \text{weary and} & \text{worn} \\
\end{array}
\]

Though the measures notated above differ in the number of their syllables, it will be seen that they are nevertheless all alike in the point of being divided according to a \textit{triplicate} scheme. In each case the eighth-note is the unit; in measure 3 it occurs separately three times; in measure 2, two of the units are simply combined to form the longer note. In practice, however, measures are often encountered which follow neither of these patterns in their syllabication. The following verse, for example, from \textit{The Wife of Usher's Well}, shows an obviously different arrangement in its first measure.

\[
\begin{array}{cccc}
(1) & (2) & (3) & (4) \\
\text{She had three} & \text{stout and} & \text{stalwart} & \text{sons} \\
\end{array}
\]
In reading this verse aloud it will appear that the word *three* in the first measure (an important word in the meaning of the verse) occupies no less time in its articulation than does the preceding word *had*. The time of the measure, in fact, is about equally divided between them. The musical device of the dotted note can, of course, be used to good effect in representing such a division of time. The time value of the dotted note is the normal value of the note plus one-half ($1\frac{1}{2} + 1\frac{1}{2} = 3$).

Measures often contain rests, and the rests vary in length; but no matter how built up, all of the measures in the verse occupy the same sensible amount of time in the reading. This statement is subject, as it is in music, to the qualification that variations of tempo for purposes of expression sometimes extend or shorten the actual time consumed in the reading of a particular measure. The time signature, then, can be worked out and set down as a fraction, as is done in music. In the verses we have been examining, for instance, each measure contains three eighth-notes or their equivalent. The time signature, therefore, is $\frac{4}{2}$.

Rests, as in music, are simply measures or portions of measures not occupied by syllables, and in designating them we may use ordinary musical symbols, i.e., $\times$ for the quarter-rest and $\gamma$ for the eighth-rest. The proper observation of rests is essential to the rhythmic structure of some stanzas, of which the following Common Meter pattern is a good example. I select this stanza pattern here because it includes a maximum variety of metrical situations.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Symbol</th>
<th>Syllable</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$\times$</td>
<td>wife at</td>
</tr>
<tr>
<td>2</td>
<td>$\gamma$</td>
<td>wife was</td>
</tr>
</tbody>
</table>

\[\text{She had three stout and stalwart sons}\]
Let us now briefly observe. The apparatus we are using will serve to mark (1) the number and position of metrical accents or stresses in each verse, (2) the number and boundaries of measures, (3) the timing of syllables in each measure, (4) location and duration of rests. An analyst can also use the notation to display syncopation, compound measures, and other less obvious actualities in verses where they occur.

The next two illustrations are notated, respectively, in simple and compound measures.

Syncopation can produce beautiful rhythmic effects. Notice the final line of this ballad stanza.
Barring

Last night my daughter Polly

Was dreaming of thee

Technique must not be confused with interpretation. The possibility of different (perhaps equally good) readings of a given stanza has nothing to do with the question of the validity of the notational method we are employing. The notation of the above stanza, for instance, is in no sense an effort to legislate an exclusively proper reading of it. It only serves to demonstrate how one reading (the writer’s) may be graphically represented. Any other reading, good or bad, could be equally well represented by the symbols. If, for example, some reader of the stanza should pronounce the words night my with dotted eighth-note value on each syllable (i.e., \( \dot{\text{vor}} \)), as I have not done, there is no reason in the notational system itself why he should not do so and represent his reading accordingly. Notation is nothing beyond a picture of sound. The question of good or bad reading is another matter altogether.

BARRING

Though Lanier has been blamed for his bold departure from traditional technique, the one great fault of his treatise results ironically from his failure to shake off a traditional fetter. Instead of placing the vertical bar (the measure boundary) always before a metrically accented syllable, as in the scoring of music, he follows the foot groupings of classic prosody wherever the meter appears to allow it. For instance, instead of
or perhaps

The \( \text{slings and arrows} \) of outrageous fortune

he supplies (p. 135)

The \( \text{slings} \) and arrows of outrageous fortune

In explaining this practice he writes (p. 180):

Of course it is easily seen that by writing blank verse with the first unaccented note as an anacrusis, thus:

\[
\begin{array}{c}
\text{Na-} \\
\text{vure shall} \\
\text{be a} \\
\text{little aca-} \\
\text{deme}
\end{array}
\]

we can bring the accented note to the first place in each bar [measure] as customary in music. But (1) this changes the form of each bar from the iambus \( (\bar{j} \bar{j}) \) to the trochee \( (\bar{j} \bar{j}) \); and (2) makes each line begin with the anacrusis, as if a new scheme; and (3) what is worst of all, results in the fact that the bar of the scheme does not represent the real bar of the verse, the form being in this case a trochaic bar while the bar of blank verse is always distinctively an iambic bar.

But all that is really gained by this compromised technique is the appearance of conformity to foot divisions, and a heavy price is paid in the resultant loss of simplicity and accuracy, for by proceeding in this way Lanier is forced to sacrifice uniformity of method. The bar, instead of always dependably standing before and thus designating a metrical accent, has to be shifted about to accommodate various configurations. It precedes the accent of a trochaic grouping, follows it in the case of an iambus, and is sometimes unadjacent to it at all, as demonstrated in Case III (pages 13ff, above). Such juggling amounts to a serious disadvantage since (as shown in Cases II [pages 11ff] and III) only as a marker of stress is the bar capable of measuring the isochronous intervals of metrical language. Lanier, aware of the difficulty, has indicated his stresses and the rhythmic movement
Barring

of the line by special accent marks (\(\wedge\)) and has thus evaded one of the worst dangers of the foot system; but his practice is nevertheless a muddled one in comparison with the simplicity of the strict musical measure. Despite his numerous detractors, Lanier has exercised a good deal of influence, and it is therefore regrettable that his authority was not thrown solidly behind a system of barring that admits of no logical discrepancies.

More important than his shortcomings are the suggestions raised by Lanier's effort to solve this difficult problem of effective barring. If iambic means a weak (unaccented) syllable followed by a strong (accented) one—as generally employed—then \(\text{result}\), \(\text{re}s\ll\text{t}\), \(\text{res}\ll\text{ult}\), and \(\text{result}\) are all equally iambic, since they are all accentually identical. It makes no difference to the label \text{iambic} whether a bar is used or where it is put. All of the following four lines are identically iambic:

1. The stag at eve had drunk his fill
2. The stag at eve had drunk his fill
3. The stag at eve had drunk his fill
4. The stag at eve had drunk his fill

In line (2) the bars are set \textit{within} the iambs, but if we are not using the foot system there is no reason why they should not be so placed. It is what we hear, not what we see, that counts as reality in rhythm.

Rhythmic movement, in language as elsewhere, is wavelike. An accented syllable is not truly a mark of separation, as the bars would suggest, but a culmination or crest of force which punctuates the sound of the verse by its superior intensity. An accent, if preceded by syllables at all, is preceded by a rising or
gathering of force and its impact is likewise followed by a corresponding recession or diminishing of force. The bar, or its position, is merely a notational convenience, useful if it follows some consistent principle. For maximum graphic realism it should doubtless be drawn right across the body of the syllable at the point of its greatest volume, or in other words, wherever its syllict or point of advent is felt.

“Rising rhythm” and “falling rhythm,” as applied to language, are misnomers. “Iambic” and “trochaic” tell us whether a verse ends or begins with a strong syllable. The groupings of the feet are phrasal in their nature, rather than metrical. Milton, a superb master of versification, uses iambic and trochaic lines interchangeably in L’Allegro without producing any feeling of metrical incoherence at the points of transition. I pick a sonnet (Divina Commedia, I) from Longfellow (a meticulous craftsman) and find six of its fourteen “iambic” lines with trochaic beginnings.

ALTERNATION OF STRESS

Compound rhythm (dipodic meter) is familiar to modern prosody in song-like lyric poems having a well-established pattern of two short syllables (or their equivalent) in each simple measure. In Exs. 7–8 we examined a model of this structure, for convenience is repeated here:

```
A
Dipping through the tropics by the palm- green shores
```

A natural reading shows that the stress in measures 1, 3, 5, and 7 (dip, trop, palm, shores) is stronger than the stress in measures 2, 4, and 6 (through, by, green). Using dipodic measures the scansion would be represented:

```
Dipping through the tropics by the palm- green shores
```

Alternation of Stress

What is seldom realized in prosody is that the principle of stress alternation, really a pattern of dynamic contrast in a regular series, represents a basic tendency in all rhythm and in varying degree affects all English verse. It is plainly discernible in blank verse, a meter as far removed as possible from song-like rhythm and as close to the accentual structure of prose as metrical verse can be made.

Instead of the four gradations of stress used ordinarily by linguists, it is advantageous for this particular analysis to simplify the scheme to only three levels: (') for strongest, or primary; (') for weaker, or secondary; and no mark at all for least strong or zero level.

The quality of mercy is not strained,

It droppeth as the gentle rain from heaven

Up on the place beneath. It is twice blest,

It blesseth him that gives and him that takes

The double-bars divide the verses into compound measures. Notice that nine of the twelve double-bars are followed by primary (strongest) stresses, and that seven of the eight single-bars are followed by secondary (weak) or by zero stresses. The pattern is generally one of strong-weak stress alternation. The variant measures, like rain from and on the, which depart from the strict pattern of accentuation, illustrate once again the handsome counterpoise in any good poem between the ideal schematic frame and the varieties of its syllabic overlay. We have noted this before in the adjustment of longer and shorter
syllables to the rigid time-pattern on which they are superimposed; here we see the same principle of balance and counterpoint as it applies to accent.

The Long Meter (abbreviation: LM) stanza will serve well as a second illustration of the inherent pull toward dipodic structure. LM is a perfectly quadratic pattern. It consists of four-stress lines, each in four measures.

\[
\begin{array}{c|c|c|c|c}
& \text{I will not} & \text{go and} & \text{tell my} & \text{father} \\
\hline
\text{For} & \text{he lies} & \text{on his} & \text{bed at} & \text{rest,} \\
\hline
\text{And} & \text{in his} & \text{hand he} & \text{holds a} & \text{dagger} \\
\hline
\text{To} & \text{kill the} & \text{man that} & \text{I love} & \text{best} \\
\end{array}
\]

Here six of the double-bars are followed by primary stress, while seven of eight single-bars are followed by secondary or zero. Again, the alternating pattern is definite and solidly established. The two measures showing variations of accentual poise represent only the variety usual in all poetry: i.e., the degree and deployment of stresses in different verses is never uniform or exactly parallel, but only similar enough to establish securely the rhythmic structure of the stanza.

The septenary verse fares likewise:

\[
\begin{array}{c|c|c|c|c|c|c}
\text{I must go} & \text{down to the} & \text{seas a-} & \text{gain, for the} & \text{call of the} & \text{running} & \text{tide} \\
\hline
\text{Is a} & \text{wild} & \text{call and a} & \text{clear} & \text{call that} & \text{may not} & \text{be de-} & \text{nied} \\
\end{array}
\]

The indication by alternating stress of compound measures in this couplet is almost perfectly regular.
Alternation of Stress

Another couplet from Masefield shows these features in six-stress verse cast in eight measures. The reader will doubtless agree that it has great rhythmic beauty.

```
I have seen | dawn and | sunset | on | moor and | windy | hill |
-----------|---------|--------|----|---------|-------|-----|
1 1 1 1    | 2 1     | 1 1/2  | (2) 1 | 2 1     | 2 1   | 2 (1) |
```

```
Coming in | solemn | beauty, | like | slow old | tunes of | Spain |
-----------|--------|---------|------|----------|---------|-------|
1 1 1 1    | 1 2    | 1 2     | (1) 2| 1 1/2    | 1 1/2  | 2 (1) |
```

The accentual complexion of Common Meter (abbreviation: CM) is perhaps the most subtle in English poetry.

```
The ice was | here, the | ice was | there, |
-----------|----------|--------|-------|
1 2 1      | 2 1      | 2 1    | 2     
```

```
The ice was | all a- | round: |
-----------|-------|--------|
1 2 1      | 2 1   | 2 (1)  |
```

```
It | cracked and | growled, and | roared and | howled |
---|--------------|---------------|------------|-------|
1 | 2 1          | 2 1           | 2 1        | 2     |
```

```
Like | noises | in a | swound! |
----|-------|-----|--------|
1 | 2 1   | 2 1 | 2 (1)  |
```

Though allocations of accent vary considerably in this type of stanza, stresses in the longer (tetrameter) lines are usually in the weak-strong order of alternation. Verses are normally syntactic units or phrasal units in one way or another. As the linguists tell us, speakers tend to throw a primary (maximum) stress on the final accented syllable of a phrase. Anyone may observe for himself that this usually happens in a verse, regardless of its length. In CM this principle tends to pull the longer (four-stress) lines into their typical weak-strong stress pattern. But the same tendency operates in the short (three-stress) lines too, with, of course, the opposite result. The curious counter-patterns in diagram look like this:
Yet, despite the converse and seemingly contradictory order of alternation in the long and short lines, the rhythm of the whole stanza has the pleasing unity everyone is familiar with in reading a ballad.

How is the apparent conflict and tension resolved? Explanation begins again with the dual structure of verse rhythm: there is (1) the fixed pattern, and (2) the variable syllabic overlay. The first is the mentally-realized ideal form with which the second coincides or from which it varies in its subtle, though agile, function of producing fluidity within the bounds of established rhythm. Let us examine what happens when the stanza is read, remembering of course that we are dealing here with transactions taking place on the subconscious level, which we become aware of only as analysts.

Observing the model, we note that CM starts out exactly as LM does, so that the addition of three metrically similar lines would actually produce a normal LM quatrain. In reading or reciting the first line of a CM stanza, then, the voice actually produces, and the ear hears, the weak-strong alternation of stress.

The ice was here, the ice was there

But simultaneously the mind is aware, in anticipation of the shorter following line 2, that the basic scheme runs in strong-weak order. That is, the underlying pattern throws primary stress on ice and ice, while the voice primarily stresses here and there, in accordance with natural idiomatic speech accent. The interesting and artistically excellent effect of the tension produced by this opposition is analogous to that of a series of musical chords just prior to resolution by a cadence. The op-
posed accentual schemes seem poised in balanced struggle until the shorter following line, with its three stresses in strong-weak-strong order, powerfully resolves the basic pattern which the syllables here and there had been phonetically resisting. The rhythmic sense appears to feel the pair of lines as if they constituted a septenary whose real termination comes just before the full-measure rest, which itself adds to the sense of finality. Thus CM, aesthetically speaking, consists of an experience of two patterns running simultaneously together somewhat like melody and alto voices in a duet; they are different from each other, yet paradoxically create harmony out of their difference. Psychologically the paradox is just as mysterious in music as in verse, but in both arts the sensory and mental actualities of experience are readily demonstrable.

We lack space here to pursue the principle of alternating stress as it operates, either as a tendency or an integral feature of rhythm, in other metrical patterns. The exhibited examples have performed their duty if they have made clear that the dipodic patterns recognized by prosody are in no sense anomalous or freakish, but represent the outworking or expression of an inherent tendency.

The metrical principle of alternation, as all these illustrations show, begins with the weak and strong (or heavy and light) syllabic components of the simple measure, which in turn are combined on the same principle into double or compound measures having a like organization on a larger scale.

FLEXIBILITY OF VERSE

Musical and arithmetical notation present a surface appearance of rigid regularity. But nobody reads verse in a mechanical or metronomic fashion. Some critics of these notational systems have been puzzled by this apparent discrepancy, or have even suspected skulduggery. The question has been asked
whether representing syllables in mathematical ratios (third, quarter, etc.) is a perfectly accurate measurement of their real time values as spoken. As noted earlier, of course it is not. Scientific observation has shown what common sense would suggest, that in activities such as poetry and music, the mental metronome is not concerned with mathematics, *per se*, but with expression.

But whether recognized consciously or unconsciously the fixed, ideal scheme does exist, and the movements of both poetry and music are based upon it. In music and verse, therefore, we are obliged to employ mathematical ratios in order to determine intelligible measurements. Auditory study of verse will quickly teach anyone that its time signatures are no more arbitrary or fictional than those of music. In both arts, the time scheme serves as the necessary base, a point of departure and return, for all the variations and flexible nuances that are the life of the art. Skillful reading of poetry achieves a delicate poise between abstract schematic meter and the expressive patterns of prose rhythm, or free language, that are laid over it and adjusted to its periodicity. Good reading renders phrasal groupings and shapes of sentences as well as the form of verses, though never (unless perchance in drama) as if the verses did not exist. It is difficult sometimes for students of this subject to reconcile pauses, hesitations, shifts in reading speed, and the like, with the theoretical equality of the time-beats in the measures. These matters, however, are the same as in well-played music. Rhythm is not destroyed or damaged by pauses, or by accelerating or retarding tempo, either gradually or suddenly. The rhythmic sense is skillful in achieving a uniform *rate* of acceleration or deceleration, or if not uniform, close enough to it to remain rhythmically intelligible. No matter how great the variation, if one is actually reading or speaking rhythmically the reference to the underlying mathematical pattern is always
Accent vs. Quantity

there. The typical unconsciousness of this relationship no more eliminates it than a dancer’s unawareness eliminates the patterns executed by his feet. Creators and performers of poetry weave the manifold and subtle variations of movement without confusion into the basic metrical fabric. The only limit is that of rhythmic intelligibility: if variation reaches a point where poet or reader is no longer guided by his basic scheme, he ceases to express metrical language and shifts to prose.

ACCENT vs. QUANTITY

Nothing is commoner in metrical discussions than the assumption that accentual and quantitative verse are mutually exclusive genres, that English verse must be one or the other but cannot be both, that a man must subscribe to one view or the other, as if he were embracing an article of faith. The issue remains alive, I think, chiefly because there is no logical basis for argument. We read the claims of those who believe verse rhythm to be “based on accent” and the views of those who hold it to be “based on quantity.” But such an argument is like trying to decide whether the essential dimension of a billiard table is the length or the width, or whether the shape of a billiard ball is based on diameter or circumference. It is clear from every demonstration in this study that both accent and quantity are necessary and mutually supplementary. There can be no question of hierarchy. Those who suppose that accent is not basic will not be very convincing until they can demonstrate how to construct a series of compartments without partitions. Quantity means measured duration in terms of some intelligible unit. Those who believe this is not essential in verse will make their case when they can show us how to lay stripes ten yards apart on a football field without taking measurements between them. Whether in the dimension of time or space, for all
practical purposes there can be no finite distances without boundaries or boundaries without distances. It is high time the warring factions buried the hatchet and joined forces, for both sides advocate indispensable principles.

Lanier's statements regarding the relativity of accent and quantity have drawn controversy into a bewildering snarl. When people refer to "Lanier's theory" as "probably unsound," "still debatable," and so forth, this is the problem most often at the back of their minds. There is excuse for divergent opinions. In Lanier's practice the accents are all there and functioning normally, while in his terminology and theoretical exposition he indicates that accent is something "secondary." In getting at Lanier on this issue, what we must chiefly be on guard against is any notion that he ever considered accent as secondary in practical importance. Throughout his demonstrations accent and quantity are consistently shown as inseparable necessities working together in harmonious conjunction. His position here is impregnably sound.

His statements of theory, on the other hand, are difficult to understand and reconcile. "Time," he writes (p. 53), "is the essential basis of rhythm. 'Accent' can effect nothing, except in arranging materials already rhythmical through some temporal recurrence." We remember how this proposition was illustrated in the clock-tick example: the steady ticking is inorganic or ungrouped (primary) rhythm; but the human mind has a tendency "to arrange any primary units of rhythm into groups, or secondary units"—an integrating process which, in verse, produces a series of metrical stresses which Lanier calls secondary rhythm—and he explains at once that this secondary rhythm is what "is usually meant by the term 'rhythm' in ordinary discourse." He goes on to say: "Possessing a series of sounds temporally equal or temporally proportionate, we can group them into various orders of larger and larger groups, as we shall pres-
Accent vs. Quantity

ently see, by means of accent; but the primordial temporalness is always necessary."

Now, as long as the mind is dealing with an inorganic series of sounds already presented to it a priori, as in the case of many undifferentiated mechanical rhythms, what Lanier says is undoubtedly true. But he gets on dangerous ground when he tries to apply the analogy to the phenomena of speech, for here the matter of priority is very difficult or impossible to ascertain. Do we accent because we time, or time because we accent, or do both simultaneously in a single unified act of cerebration? The probabilities, to my mind, are enormously in favor of the unified act. What Lanier failed to notice is the weakness, relative to this special point, of the analogy between mechanical rhythms and those of speech. Unlike the clock-tick, speech does not comprise an array of unaccented sounds presenting themselves to be accentually disposed of in some manner or other. Speech sounds come already equipped with their accents.

There is certainly a chance—I think a strong one—that Lanier, could he be consulted and made aware of the discrepancies in his statements, would agree that in the making of real verse rhythm, as a speaker does it, there can be no question of a cart and a horse: rhythm is born total with all phases simultaneous. He may have intended his clock-tick illustration, with all relevant adumbrations, to be nothing more than a purely theoretical expedient aimed at showing the complexity of generic rhythm and how it can schematically be built up—in blueprint—in successive stages of integration. His footnote to the discussion on page 53 should not be overlooked. It adds: "These considerations, which have been purposely put into a somewhat rambling form in order to present the matter from several points of view, can now be summed up in a convenient demonstration. The theorem is, there can be no rhythm in sounds except through their relative time or duration ('Quantity')."
Which is only to repeat that timing is necessary to rhythm. And on page 86, in speaking of “arranging the primary rhythm of the individual sounds in a bar at pleasure so long as the typic time-value of the bar is preserved,” he seems to recognize the simultaneous nature of the whole procedure, since the “primary rhythm of the individual sounds” cannot be “arranged in a bar” unless a bar is there to arrange them in, and the bar, of course, is made by accent. Speaking of the rôle of accent (p. 94), he corroborates: “In listening to a poem the ear is enabled to make these coördinations [i.e., to perceive measures] by hearing a rhythmic accent occur at a given interval of time. The rhythmic accent marks off given periods of time for the ear: and the ear’s power of exactly coördinating the duration of sounds enables it to say, as each group passes in review before it, whether all the sounds of each group (bar) fulfill in duration the given period of time which is the normal duration or typic time value of each group.” Here, in the actual kinetics of reading—the acid test, after all—timing and accent are described as mutually helpful. Though he is not explicit about it, I have the feeling that this quotation really indicates Lanier’s position relative to what happens in verse rhythm, whatever he may say about mechanical analogies.

PHYSICAL MEASUREMENTS

Rhythm in art is an experience and, as such, its realities are mental or kinesthetic or both together. In any case they are always subjective, and for this reason are only explainable in small degree by the measurements belonging to objective physical science. Our central problem of syllabic timing has been somewhat clarified by mechanical graphs of speech sounds. They have verified the point that the human mind does not make perfectly exact measurements of time in poetry or music. And yet, in terms of averages, they have strongly corroborated
the theory that syllabic durations are related to one another in simple mathematical ratios. But after recognizing these things, the difficulty remains that in rhythm we are dealing, after all, with mental perception of intervals and are thus ultimately confined in theorizing to what we, as living organisms, recognize or feel to be rhythmic. The ultimate problem is not what articulated speech intervals look like on paper, but whether the intervals, however recorded, are apprehended by the ear in terms of, or with reference to, simple time ratios. If the words *look, look, look*, spoken in series, sound to the ear as related in the ratio 1—1—1, the rhythmic periodicity is a fact of experience and cannot be dislodged by mechanical proof that the exact ratios are 1, 1.07, and .96. The mathematical disparity would be much greater than in the series just shown, should the reciter (especially a skilled one) happen to be reading actual poetry and giving due attention to expressive changes of tempo and the other vagaries of successful poetic communication. William Thomson remarks (op. cit., p. 103): "No mere piece of mechanism can tell within what limits or under what circumstances two sounds it records as equal or unequal will be pronounced by ear and mind to be so sensibly and rhythmically." D. W. Prall (Aesthetic Analysis, 1936, p. 121) makes a relevant comment: "The only possible test of the aesthetic structure of pitch pattern, as of rhythmic pattern, is the trained human faculties of direct perception; and if the ear hears a regularly measured flow of verse, then aesthetically the flow of verse is regular and measured." The great trouble with mechanical recordings is that, while they can record time as absolute fact, they miss the significant relativities. They cannot, for example, record the relation of time to ever-shifting tempo, so that the interpreter of data has a task comparable to that of understanding the movements of a dancing girl by studying her footprints. In the end, the only reliable method of studying metrical prob-
lems seems to consist of sensory experiments and observations such as we have employed in this study. Perhaps, as students of rhythm, we can take a degree of comfort from the residual fact that senses and brain are the ultimate court of appeal in any case, whatever the inquiry may be or however precise and elaborate the machinery. The astronomer uses a telescope, but he counts on his naked eyesight to look through it or at the photographs taken with it, to tell him what lies beyond, and he has nothing superior to his native reason to use in forming conclusions about what his observations mean. Most of the experiments and tests used in rhythmic study require much less sensory and intellectual skill than do the techniques of astronomy or histology.

COLLATERAL CONSIDERATIONS

Inasmuch as measure rhythm has excited more controversy than any other metrical problem in human history, it seems fitting and proper before taking leave of the subject to glance briefly at several logical considerations which give strong support to what I believe is the rational side of the venerable dispute. The first of these has already appeared in Ex. 1 of Case I, but I recapitulate here for convenience, using different illustrations.

*Test by Contrast.* Notice the radical difference in movement between the two examples below:

```
A.  Fat black  bucks in a  wine barrel  room
    2  2   2  1  1  2  1  1
    d d  d d d d

Barrel house  kings with  feet un-  stable
    1  1  2  2  2  1  1
    d d d d d
```

68  Time and Stress in English Verse
B. And the sheen of their spears was like stars on the sea

\[
\begin{array}{ccc}
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
\end{array}
\]

When the blue wave rolls nightly on deep Galilee

\[
\begin{array}{ccc}
\frac{1}{2} & \frac{3}{2} & 1 \\
\downarrow & \downarrow & \downarrow \\
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
\frac{1}{2} & \frac{3}{2} & 1 \\
\downarrow & \downarrow & \downarrow \\
1 & 1 & 1 \\
\downarrow & \downarrow & \downarrow \\
\end{array}
\]

We note here once more the obvious distinction between the movements of duple and triple rhythm, a distinction solidly established in modern prosody and open to general inspection. Both of these models are in four-stress (tetrameter) verse. What accounts for the rhythmic contrast between them? Syllabic timing alone can account for it. This demonstration of the rôle and significance of measure rhythm is, to my own way of thinking, conclusive.

The alternatives. With the problem of measure rhythm the alternatives are simple. Either the mind arranges syllables in the measure according to an intelligible scheme of timing, or it tosses them in at random or by a sort of accident. It must be one way or the other. If we assume syllabication to be a random or helter-skelter procedure, we then have to face the baffling question of how the total durations of syllables in a measure miraculously add up to occupy the correct amount of time between the stresses. To suppose that such an adjustment of parts to whole could be consistently accomplished by mere chance is, after all, a little too much for credibility. Should anyone seriously try to establish such a theory, he would have to explain and demonstrate, for example, in verses like:

<table>
<thead>
<tr>
<th>Kentish Sir</th>
<th>Byng</th>
<th>stood for his</th>
<th>King</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 1</td>
<td>3</td>
<td>1\frac{1}{2} \frac{1}{2}</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bidding the</th>
<th>crop-headed</th>
<th>Parliament</th>
<th>swing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1 1</td>
<td>1 1 1</td>
<td>1 1 1</td>
<td>1 1 1</td>
</tr>
</tbody>
</table>
70  Time and Stress in English Verse

(1) that the measures do not contain three beats but a varying number of beats, or perhaps none at all, (2) that no triplicate movement can be felt in the lines, (3) that there is no syllabic organization, but temporal chaos instead (like the sound of popping corn), the syllables adding up to the correct amount of time in the measures by sheer accidental coincidence (a fortunate sort of accident that would have to be repeated thousands of times successively in poems like *Paradise Lost* and *The Faerie Queene*). But all three of these propositions run contrary to the plain evidence of the senses. One might as well try to perceive four legs, or none at all, on a normal boy. I have seen a good many cogent elucidations of measure rhythm but never one of the alternative hypothesis, and the reason is clearly that the hypothesis is untenable. Many critics have denied Lanier's central theory, but no one has ever disproved it.

The following experiment will throw additional light on the significance of the alternatives. I would recall to mind, first, that time measurements in simple ratios can be executed by all normal human beings past their infancy. School children manage it with facility in singing, folk-dancing, band and orchestra work. In the second place, when poetry is deliberately read according to these conceptions of timing, as we have noticed many times, it always sounds natural and right. The implications here are important. For if actually producing the quantities gives a proper reading, it seems certain that the quantities used belong to that proper reading. What could one say instead? If the pieces of a jig-saw puzzle can be fitted together to make the picture, may we not rest assured that we have the proper component parts?

On the other hand, it is easily demonstrable that a random mixture of syllables of many durations is not producible by human organs under the guidance of the human ear. Let us make the comparison.
Any person can execute, easily and naturally, either of the two slightly variant readings of the familiar line shown above. Let us now assign values to these syllables in a helter-skelter fashion. (This test is suggested by Lanier’s remarks on page 58 of his book.)

The fractions add up to the same total of 3 in each measure. Yet it is obviously impossible for any human being to execute such a series of sounds. Anybody can try it. Nobody can do it.

Here is an even more convincing variant of the same experiment. First we read Robert Frost’s familiar line in this manner:

Next we read it with the time values (notice the numbers) in reverse, so that and (in the third measure) occupies twice the time of dark, are is double the length of woods, etc.

It is obvious beyond doubt that the first reading is a correct and natural one, while the second is preposterous and virtually unpronounceable. The contrast should be interesting to the “accentualist” inclined to suppose that accent is really all that counts metrically, and that quantity (measured duration) makes no difference in English verse rhythm.
CONCLUSIONS

We have explored in considerable detail the theory of measure rhythm, which was first elucidated in America by Lanier and has since become well established in prosody, though not yet in general education. The primary concern of the monograph has been to present, explain, and illustrate. As mentioned at the outset, however, syllabic timing is the great blind spot of English prosody, and since it is still regarded in many quarters as controversial, I conclude by appending a brief summary of the case for the defendant. The theory of measure rhythm is valid and necessary for the following reasons: (1) it is susceptible of explanation and demonstration, as we have seen many times and from many angles; (2) without it the obvious difference between duple and triple rhythm is unaccountable; (3) it is supported by the analogies of all other rhythmic arts and activities; (4) it is supported by the tapping test; (5) it is supported by mechanical tests; (6) it has never been disproved; and (7) the alternative to it is untenable.