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RHYTHM

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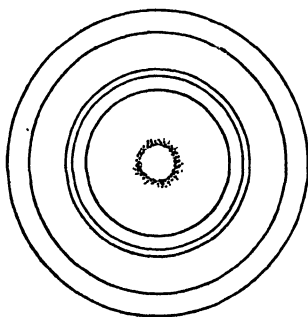


DETAIL FROM THE SCROLL OF "THE HUNDRED GESE" INK ON PAPER BY MA IEN, LATE
ELEVENTH CENTURY A.D.
HONOLULU ACADEMY OF ARTS

By kind permission of the Royal Academy of Arts, London, Chinese Exhibition, 1936

Elsie Fogerty

RHYTHM



Am Anfang war der Rhythmus

HANS VON BÜLOW

LONDON

George Allen & Unwin Ltd
MUSEUM STREET

FIRST PUBLISHED IN 1936

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TO
BERNARD SHAW
IN HOMAGE TO HIS GENIUS
AND IN GRATITUDE FOR THE HELP HE HAS GIVEN
TO ALL
WHO CARE FOR
THE RHYTHMS OF SPOKEN ENGLISH

1936

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RHYTHM

CHAPTER I

INTRODUCTION

THERE are many words whose significance is beyond our understanding. "Infinity," "Eternity," "Space" itself, when we do not use them in a narrower or more figurative sense, are like the winged circle which the Egyptians used to express them—pure symbols.

There are others so personal and spiritual that to define is to destroy them. "Poetry" and "Beauty"—when we attempt to limit their meaning by other terms—slip away from us and leave us the poorer in appreciation.

Other terms of conventional acceptance avoid analysis because we are all so convinced we possess a special revelation of their full significance; the trained debater often perplexes by a demand for their instant definition, and so betrays his opponent into a discussion as profitless as a combat of wits between Hotspur and Falstaff on the question, "What is honour?"

Sometimes we have no image whatever behind the words we use. Many youthful students of geography have cheerfully included "jute" and "copra" in improbable lists of exports and imports, with no visual image whatever of the products so named.

There are other words of so inconveniently large a significance that the dictionary is reduced to defining their variety in use by examples alone, where the sense is instantly clear from the context; as in the word "Form," which may be logically wedded to "Fours," or to the domestic arrangements of the hare.

Occasionally, one of these words becomes almost entirely figurative in meaning, as in the word "Nature," at times personified with a variety of powers, intentions, and purposes more omnipotent than Deity itself. Sometimes, however, a word used in a variety of vague meanings, during a period of vivid and critical speech development, suddenly serves to reveal a profound kinship underlying all these meanings, and is rapidly expanded to embody a new revelation of knowledge vital to humanity. So, in the seventeenth century, the word "gravity" expressed for Newton a conception of force already familiar, which, at the time, revolutionized mechanical science and re-created Astronomy and Physics. Such a combination of verbal and logical elucidation is like the discovery of a new instrument of thought,—it makes our conception of all life and action clearer.

This book attempts to dispel the vagueness which attaches to the many recognized meanings of the word Rhythm, and to link these meanings into one. The great range of subjects which is related to the study of Rhythm has proved a cause of confusion. Experts in Dancing and Verse, in Music and Psychology, in Art and in Physiology, have each attempted to limit the term to their own requirements. Six blind men once again have tried to draw the elephant, and we fail to imagine the living force which stands behind their individual investigation.

Among the problems which beset the consciousness of Man, there is indeed none more vital, and none more perplexing, than that of so distinguishing between the nature of "Things as they are" and our consciousness of these things as we ourselves experience them.

Instinct seems to offer a solution of many such mysteries, yet we fear to trust it. That reason which we call

common sense satisfies, till it fails us, and defeats our intention.

To the Mathematician, truth illumines only those who reject every personal predisposition, every merely individual instance to trace the inescapable law behind it.

But it is childish to suppose that these disjointed impressions must remain for ever unrelated. Is it not possible that this age may be remembered for the achievement of having revealed many of the wider truths that give unity to our whole view of life?

One thing can never help us; the pretentious assumption of unity where none exists. It is here that the Mystic, the Musician, the Poet, and the Artist often stand nearer to absolute truth than the Philosopher. To "Draw the thing as he sees it, for the God of things as they are," is all the material heaven an artist claims.

The true mystic who reveals his vision of the unconscious with the simplicity of an inspired child, has given mankind his soul.

A half understanding of these things is the greatest danger of modern life. It gives us the popular scientist who condescends to fit the Absolute into a newspaper article; or, more terrible still, the sham Mystic who takes refuge from reality in terms devoid of general or of accepted significance; the poet whose only depth lies in his obscurity, the singer, the dancer, the artist, who have neither mastered time, tempo, nor drawing, because they are too "modern" to require them.

The subject of this book is perhaps more than any other open to the dangers here suggested.

Not that beautiful word "Mesopotamia" itself has ever deluded the unthinking more dangerously than the term "Rhythm." In attempting a survey of its significance, there is no hope of completely escaping the reproach of shallowness, of pretentiousness, even of falsity.

"Why not confine the term to those instances where it is generally accepted?" is the righteous and just condemnation that may probably be aroused. There can be only one excuse.

Thirty years of practical work have justified some attempt to take stock of the common knowledge as it stands to-day. Starting from either end of the problem;—the scientist's, as it concerns certain applications where rhythm has been imperfectly recognized;—the poet's, where rhythm is the principle activating all his thought;—neglecting for once the teacher who is tempted to leap at wild and "eurhythmic" assumptions in things he can only teach and not do—a thread of unity seems to link every random use of the word. That is the sole justification for attempting its more general definition.

"We all know what it means, but of course we can't express it." "It is the profoundest mystery of the Unknowable." The two points of view are practically alike, since both are alike pretentious. The underlying solution may lie behind something as simple as the fall of an apple, or the swing of an altar-lamp.

A clearer understanding of Rhythm may imply a new conception of movement already dimly felt by those who have studied more narrowly, if more profoundly, the isolated aspects of the subject.

The simplest of all definitions of Rhythm is based on the idea of repetition. Before accepting this, it would be well to examine more in detail the whole range of terms associated with the word, and see how far they help us to any preliminary definition. All are of a narrower significance than Rhythm itself; "repetition" in no sense conveys the full sense of Rhythm unless we explain it as measured, significant recurrence, marked by time and force; is it not rather the means by which we become most readily *conscious* of Rhythm? We only need to

picture the intolerable and irritating monotony induced by repetition of a meaningless series of beats or notes, to understand that repetition in itself conveys, and can convey, nothing rhythmic.

Periodicity refers rather to the result of rhythmic action, as in this passage from Havelock Ellis, *The Dance of Life*:

We have but to stand on the seashore and watch the waves that beat at our feet, to observe that, at nearly regular intervals, this seemingly monotonous rhythm is accentuated for several beats so that the waves are really dancing the measure of a tune.

Pattern may more properly be regarded as recurrence of design, but decorative pattern, with its strict repetition, is less rhythmic than the frieze of the Parthenon with its infinite variety. In the composition of a great plastic or pictorial design, in the intricacies of Chinese decorative art, in modern music and verse, Rhythm is present at its greatest; while repetition is implicit rather than expressed. Where pattern implies the repetition of forms in a fixed decorative or conventional order, as in the commercial "Willow Pattern" plate, or the "Egg and Dart" pattern of Victorian cornices, it easily lapses into a stencil quality to which the French appropriately apply the word "cliché." It may be suggested that Pattern is the symmetrical result of rhythmic action on matter.

Design has a far broader meaning and covers the whole scheme of any construction before it is embodied in its appropriate material. It recalls the delightful ritual phrase in masonry, addressed to the layer of the first stone: "Will it please you to peruse the whole design?" Here something which has a definite bearing on the significance of Rhythm may be noted.

Sir Charles Barry, writing of Architectural Form, points out that "while Symmetry is architectural form

whole, its meaning is allied to that of Rhythm. It is in this sense we speak of the "Music of the Spheres," a phrase often used with irritating vagueness in an attempt to describe the true significance of Rhythm; but Harmony in Music signifies again the simultaneous accord or consonance of notes rather than the pleasant relation of certain successive tones in melody.¹ It is Spatial, not Temporal, and gives the most massive expression of musical Rhythm. It is interesting to consider how modern Harmony departs from the older and simpler conception which first found its perfect expression in the Chorale and the Madrigal, and, instead of melody, gives us a kind of extended Harmony, in which the final note harmonizes what seemed a meaningless series of discords.

Is it not plain that what actually relates to Rhythm² in all these terms suggests one only of its manifestations rather than the thing itself? Our consciousness of Rhythm is much more profound than any one of them, and we can say of each of them in turn that it is not Rhythm itself. But one point does become clear from such analysis and from the normal dictionary definition which includes each of these aspects in turn: that is the presence of three constant factors:

First, *The Factor of Time*, present in measured recurrence, that is to say, in the temporal interval between maximum and minimum force which is necessary to the working of a great machine, or the isochronous interval between stress and stress, which forms the basis of English prosody.

Second, *The Element of Force*, without which the temporal spacing could not exist.

And third, *The Element of Space* itself, without which the application of force is unthinkable, and through

¹ See Donald N. Ferguson: *History of Musical Thought*.

² Ferguson: op. cit., p. 477, footnote on Debussy, &c.

which the parts of the machine must travel to carry out its function.

Throughout there seems some danger that the word Rhythm itself may become meaningless. In music it is used as an alternative to Time, Cadence, Tempo, even in some cases to Stress.

In verse, Rhythm is seldom clearly distinguished from Metre.

In painting and the plastic arts, it conveys little more than a general idea of formal balance and repetition.

In dancing the meaning is expanded to cover the whole design and structure of the performance.

Expert athletes, cricketers, divers, runners, acrobats, are praised as rhythmic, and congratulated on the "rippling rhythm" of their musculature. Greyhounds, stags, birds, and the greater cats are quoted as typical examples of rhythmic action. A great Professor of cosmography destroys our faith in the stability of Old Mother Earth, and pictures her continents setting to partners, and dividing to reunite again, like clouds in the firmament, as he describes for us "the rhythm of the Continents."¹ Every year brings an addition to the meanings applied to the word. Statistics and the phenomena of crystallization form appropriate "curves" for our delight. Certain persons who fear the insufficient emphasis of familiar terminology enlarge it and practise "Eurythmics" as they did in 1760.

The professors of each of these varied arts and practices, sciences, and beliefs, define the meaning of Rhythm to suit their special needs; each knows what he personally means by it, if only anyone else would agree.

The fallacy of the old adage, "What you can see clearly you will express rightly," is yet once again demonstrated. "As soon as we seek to define Rhythm,"

¹ British Association Inaugural, Norwich, 1935. Prof. W. W. Watts, F.R.S.

writes René Dumesnil, "we penetrate into the Tower of Babel, where reigns the confusion of tongues."¹ It must be either a very simple or an incredibly abstruse thing that can be so universally and confusedly discerned.

Turning to actual significance approved by dictionary use, we find that our breathing is rhythmic, that the beat of the heart and its contractions are rhythmic; "two short contractions of its upper and lower halves respectively, followed by a short pause of the whole."² The contraction of the voluntary muscles is rhythmic; rhythm is seen in the solar spectrum, where instead of lines, irregularly distributed, we have groups which are beautifully rhythmic in their structure. Double stars exhibit settled rhythmic order in their revolutions.

Is there any definition which will cover so great a variety of use? The object of this book is to suggest one already hinted at.

The fundamental conditions of Rhythm are Time, Force, and Space, combined in the accomplishment of function. These are also nothing less than the fundamental conditions of movement itself. More especially of those forms of motion, which are appreciable by our sensory perceptions, as Vibration, Sound and Light.

Every movement demands for its performance a degree of Force, a measure of Space, and a passage of Time. *When these three elements are synchronized with perfect success, the result is rhythmical, the time period being isochronous, the force continuous, and the spatial adjustment regular throughout.*

An attempt made to trace this principle through every form of existing movement makes it possible to contrast tentatively static inertia, and its basis in what we term the law of gravity, with movement based on the law of Rhythm.

¹ *Le Rythme Musical*, 1934.

² Huxley, quoted in Murray's Dictionary. '

Rhythm may become visible or audible; probably most people, if they were asked to give an example of Rhythmic Sound, would suggest the ticking of a clock. The instance is scientifically acceptable, and it fulfils many of the essentials for a true example of Rhythm. We will therefore take it as our first example of Rhythm, from the point of view of mathematics. It is, however, a metric rather than a purely rhythmic thing. It marks an interval in the beat of the pendulum; "it is just like cutting a ribbon into equal lengths and the ticks are the cuts."¹ The function of the tick, or rather of its loudness, is to make us conscious of the passing of seconds, just as the second hand of a watch makes us conscious of the duration of a minute. The sound of the tick would not be regarded as a rhythmic sound musically; as we listen we are so conscious of this that we begin trying to improve it, and on the clock's "one-two, one-two" we begin to imagine something which gives a more rhythmic character to the beat; perhaps we think of it, not in terms of "tick-tick," but of "tick-tock," with a rather lower pitch for the "tock," or, with a memory of our childhood, we may add something much more elaborate, and hear it as "tickety-tock."

Here, we are undoubtedly influenced by a well-known rhyme:

Dickory, dickory dock,
The mouse ran up the clock.

or, if we have been engaged in metric study, we should remember the first true example of Rhythm so far given here:

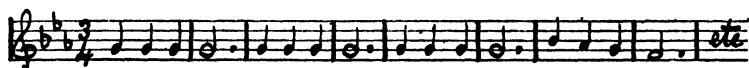
From her cradle beneath the rock
She maketh answer | to the clock.²

¹ Dr. Childs: Notes for this Chapter.

² Coleridge: *Christabel*.

These lines express the whole problem of the distinction between Metre and Rhythm, which will be discussed in Chapter VIII.

A musician might have caught the triple beat which we heard:



and he would have been reminded of what is perhaps the most perfect rhythmic music ever composed, with its recurrent triple beat, from Beethoven's Fifth Symphony (see Chapter VII, p. 131-132).

An artist listening might have begun idly to mark the ticks with his pencil, keeping time to the beat:



and here we should have had a static pattern recorded as the result of a rhythmic hand-movement.

What is common to every one of these examples? Obviously three things:

- (1) The sense of temporal periodicity.
- (2) The sense of spatial periodicity.
- (3) The sense of the regular incidence of force.

Each of the examples quoted above, except the artist's design, passes through our minds in time. The last is purely static—the result or record in space of a rhythmic movement.

We see now the different aspects in which Rhythm can be studied purely as a scientific fact; a position the clock does not perfectly fill, since it is an instrument constructed with a practical intention; but, at the same time, it shows an example of pendulum action, one of the three principal types of motion in which Rhythm is scientifically recognized.

Our effort to graft a better rhythm on the bareness of the first illustrates our psychological association of Rhythm with almost every sound we hear.

The first example belongs to the folk-song rhythms, so closely linked with man's activity in hand-craft, and in the arts of husbandry described in Chapter VI, out of which Dancing grew.

The aesthetic approach to Rhythm takes possession of this psychological instinct, and is indistinguishable from it in many ways; to understand either of them, it will be necessary to trace man's natural development in movement, since his assumption of the upright position.

Two of our examples include spoken words, the most rhythmic of all man's accomplishments; we see the disasters of stammering overtaking him when that Rhythm is nervously interrupted by psychological causes.

Further, we perceive the distinction between static pattern and Rhythm; while the pattern is created by rhythmic action, it remains itself fixed in Time—a strange and difficult thing to analyse as we stand opposite some great picture expressing movement immobilized as design.

Finally, we become conscious of an automatonism connected with the very nature of Rhythm. We cannot deliberately and intentionally produce rhythmic action. We have to practise till, as our action becomes unconscious, we establish its natural rhythm. If we concentrate, putting out all our force to move, or speak, or work rhythmically, we fail. Is not our approach to Rhythm more like the process of submitting ourselves to a pre-existing order in what we see, hear, feel, or do? A "plugging-in" to some source of power, over which we have no direct voluntary control. To use a rather "precious" term, an "integration" of our actions with a pre-existing pattern or design, as in rowing, dancing, or swimming. We are

perhaps more familiar with the opposite term "disintegration," and the characteristic effect of a completely un-rhythmic or catastrophic action is to disintegrate the object moved.

For ourselves, to oppose that force is like walking downwards on a mounting escalator; we resist the force that would make action easy. Yet, we can create in ourselves by practice a perfect rhythmic automatonism; almost as we tune in to the vibration of the wireless transmitter. We call such habit-forming a "conditioned reflex," to distinguish it from the reflex action imprinted on our unconscious self, which we find in the beating of the heart, the rhythm of respiration, or the blinking of the eyes at a flash of light.

Here, then, is some suggestion of the general ground to be traversed in attempting the survey that lies before us.

And we find it is necessary first to examine the relation of Rhythm to the terminology of Natural Law.

CHAPTER II

RHYTHM IN NATURAL LAW

THE instances and illustrations assembled in this chapter, while they are essential to the understanding of the fundamental nature of Rhythm, have not the slightest claim to original investigation. Each point made has been discussed with those who have a claim to pronounce on the facts. All that can be said is that in some instances the novelty of the approach has been of interest to those whose mathematical knowledge entitles them to decide the exact significance of the term Rhythm in that science.

Sometimes the science of Mathematics in the modern world reminds one of the Egyptian conception of the Astral Body which underlies in every fold the reality of the physical body and reproduces the essence of its existence when the two part.

The mathematician studies the universe to deduce its laws, that is to say, to be able to predict the behaviour of any object in motion or at rest under the law in question.

. . . When scientific men say they have discovered a law in Nature, they mean they have discovered where to recognize, or how to make, a repeat pattern in the Universe. That is what they mean when they say "the same experiment always gives the same result." It is a scientific experiment when it repeats, and they can then anticipate the result. In this sense science is the modern substitute for prophecy.

These words are from a popular article by Dr. H. Levy, Professor of Mathematics at the College of Science, and the point which is arresting in them is the use of the term Pattern. Again and again we shall find this use of the term as an equivalent to Rhythm; it is only necessary

to note here that a pattern is a "result" of action rather than the action itself. To the scientist therefore Rhythm implies an action which is capable of regulating repetition.

Accepting this scientific use of the word, which is not yet actually a scientific term, what types of action would be recognized as coming under the description of rhythmic actions by the mathematician?

The first type has already been referred to—the pendulum action of a clock; a better example of this action will be described below.¹

Second, and far more important is Rotation—the rotation which underlies all planetary motion.

Third, vibratory motion—the motion of a wave-train—such as the action of a ripple on the surface of a still pool.

What do these types of motion actually cover? By far the most obviously important is the second, since it includes the motion of our own earth on its axis, and in its orbit round the sun.

Repeated exactly applies both to planetary motion and recurrence of light and darkness. The appearances of a planet, or of the sun, may be predicted if we suppose that both we and the planets are rotating about the sun in elliptical orbits. Each orbit is traversed to a close approximation again and again, so that in this sense the phrase "repeated exactly" is precise and justified.²

The third type of action includes wave-train movements to which belong the vibrations giving us Light, Sound, Heat, and the Force to which we give the name "electricity," akin to them all.

Dr. Childs' note regards "repeated exactly" as the only admissible significance of Rhythm. Some element in the action must be exactly measurable—for example, the "isochronous time element." But exact recurrence of

¹ Page 28.

² Dr. Childs' Notes on this discussion.

action is surely very seldom found? We can predict an irregular return of an action if we know the exact irregularity in each instance, for example, in the case of a comet whose path is comparatively erratic. The term "*measured recurrence*" would seem more applicable to Rhythm, and is the idea underlying the great passage in Herbert Spencer's *First Principles*, where he treats of Rhythm as the fundamental law of all movement.

. . . When the pennant of a vessel lying becalmed shows the coming breeze, it does so by gentle undulations which travel from its fixed to its free end. Presently the sails begin to flap; and their blows against the mast increase in rapidity as the breeze rises. Even when, being fully bellied out, they are in great part steadied by the strain of the yards and cordage, their free edges tremble with each stronger gust. And should there come a gale, the jar that is felt on laying hold of the shrouds, shows that the rigging vibrates; while the whistle of the wind proves that in it also rapid undulations are generated. Ashore the conflict between the current of air and the things it meets results in a like rhythmical action. The leaves all shiver in the blast; each branch oscillates; and every exposed tree sways to and fro.

Streams of water produce in opposing objects the same general effects as do streams of air. Submerged weeds growing in the middle of a brook undulate from end to end. Branches brought down by the last flood and left entangled at the bottom where the current is rapid, are thrown into a state of up and down movement that is slow or quick in proportion as they are large or small.

The screw of a screw-steamer falls into a rapid rhythm that sends a tremor through the whole vessel. The sound produced when a bow is drawn over a violin-string shows us vibrations accompanying the movement of a solid over a solid . . . Even where a moving mass is suddenly arrested by collision, the law is still illustrated; for both the body striking and the body struck are made to tremble, and trembling in rhythmical movement.

Rhythm is very generally not single, but compound. There are usually at work various forces, causing undulations differing in rapidity; and hence, besides, the primary rhythms there arise

secondary rhythms produced by the periodic coincidence and opposition of the primary ones. Double, triple, and even quadruple rhythms are thus generated.

On the seashore may be noted sundry instances of compound rhythms. We have that of the tides, in which the daily rise and fall undergoes a fortnightly increase and decrease, due to the alternate coincidence and antagonism of the solar and lunar attractions. . . . Rhythm results wherever there is a conflict of forces not in equilibrium. If the antagonist forces at any point are balanced, there is rest; and in the absence of motion there can of course be no rhythm.

If the movement cannot be uniform, then (save where it is destroyed, or rather transformed, as by the collision of two bodies travelling through space in a straight line towards each other) the only alternative is rhythm.

When two forces are engaged, the curve described must be more complex, and cannot exactly repeat itself. So that throughout Nature, this action and reaction of forces never brings about a complete return to a previous state.

. . . That spiral arrangement common among the more structured nebulae shows us the progressive establishment of revolution, and therefore of rhythm, in those remote spaces which the nebulae occupy.

The periodicities of the planets, satellites, and comets, familiar though they are, must be named as so many grand illustrations of this general law of movement. But besides the revolutions of these bodies in their orbits, the Solar System presents us with rhythms of a less manifest and more complex kind. . . . These rhythms, already more or less compound, are compounded with one another. One of the simplest re-compoundings is seen in the secular acceleration and retardation of the moon, consequent on the varying eccentricity of the Earth's orbit.

The Earth furnishes the best example. During a certain long period, it presents more of its northern than of its southern hemisphere to the sun at the time of nearest approach to him; and then again, during a like period, presents more of its southern hemisphere than of its northern; a recurring coincidence which involves an epoch of 21,000 years, during which each hemisphere goes through

a cycle of temperate seasons, and seasons that are extreme in their heat and cold.

. . . In those movements of the Earth which determine the varying quantities of light and heat, which any portion of it receives from the Sun, there goes on a quadruple rhythm; that causing day and night; that causing summer and winter; that causing the changing position of the axis at perihelion and aphelion, taking 21,000 years to complete; and that causing the variation of the orbit's eccentricity gone through in millions of years.¹

Spencer's formal acceptance of the full significance of Rhythm, in which he later discovered that he had the support of Professor Tyndall, suggests the complexity of the arguments involved. A philosopher, rather than a mathematician, Spencer has in a measure gone beyond the reserved attitude of later physicists.

Regarded in this manner as measured recurrence, it is plain that the motion of a wave-train is far more properly rhythmical than the illustration more generally used of the ticking clock. But an almost perfect impression of visual Rhythm can be obtained in watching the swing of the Foucault Pendulum in the Science Museum at South Kensington, which is used to demonstrate the movement of the Earth on its axis.

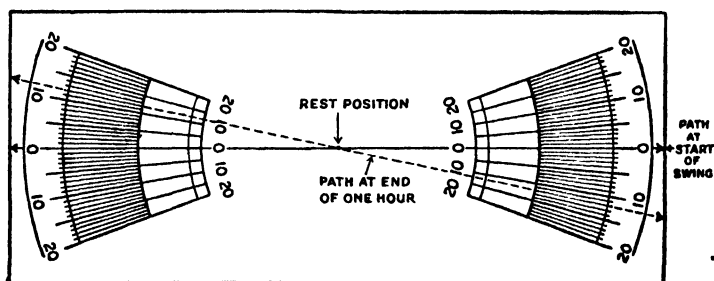
A weight of about nine pounds forms the ball of the pendulum, with a sharp-pointed finial. It hangs on a thin wire seventy feet in length, fastened to a compensatory weight in the roof of the Science Building. From the point above which the pendulum hangs motionless run the radiating lines of a scale, and the pendulum hangs over the line marked O.

The length of the lines is about seven feet. At the beginning of each hour the pendulum is gently drawn back by a little strap almost to the end of the line marked O;

¹ Herbert Spencer: *First Principles*, p. 228, Chap. X. Sixth Edition (abbreviated).

it swings over to the other end of the line; backwards and forwards, slightly decreasing its stroke at each swing, the pendulum moves, but at the end of five minutes it is found that it no longer follows the line zero but has moved a little to one side, to the line 1 at either end of its course, and at the end of an hour, just before the impulse of its swing is exhausted, the pendulum is travelling a little beyond line 12.

Since the pendulum is known to keep its direction constant, what is really happening is that the earth is rotating under the



FLOOR PLATE OF "FOUCAULT PENDULUM," SCIENCE MUSEUM,
SOUTH KENSINGTON

(Diagram drawn in the Physics department of the Science Museum by permission of the authorities)

pendulum and the ground-plate is gently moving away from the track of the point.¹

The length of the swing gets gradually less, but the time remains constant, and the point of the pendulum crosses the vertical line at regular intervals until it returns to rest above it.

The illustration of the perfect pendulum motion gradually exhausting itself in a regular periodicity, and serving as a measure for the rotary motion of the earth, is at the same time a valuable elucidation of the nature

¹ Descriptive Catalogue, Science Museum, South Kensington.

of Rhythm, and of the manner in which opposing forces gradually arrest motion.

A similar example of a periodicity, marked by a progressive lengthening of the time period, would be found in a well-known experiment on the velocity of a falling object. A brightly illuminated ball is photographed by a continuous series of snapshots during its fall. It appears almost as a continuous line in the photograph, with a series of brightly illuminated patches. The interval between these patches lengthens as the ball moves more and more rapidly in falling; and they crowd together as the ball reaches the height of its rebound.¹

It may now be questioned whether it is actually possible to distinguish clearly between actions which are rhythmic and actions which are non-rhythmic in character.

Mathematically, the motion of any object is always accomplished under the Law of Least Action, that is, the sum of all the conditions of Force, Time, and Space governing the action in each instance. Take up some small object, and, without taking any direct aim, throw it on the ground. It will strike there sharply and then bounce away, so that you will not be able to decide even where it has fallen;—probably under a piece of furniture. A collar-stud has been known to perform this experiment with great success.²

Repeat the action in the same manner and with equal unconcern—this time it may strike against something quite near to you, and roll no further.

Each time the casual action is repeated the object would take a different path and come to rest in a different place. Yet we are assured that in each instance the result is inevitable, according to the Law of Least Action. Given the conditions of Force, Time, and Space, on this

¹ See McKenzie: *Hydrostatics and Mechanics*, fig. 174.

² Cf. Newton's *Principia; Laws of Motion*, 1686.

universe at that moment, the object could have landed nowhere else.

At first we may imagine that deliberate intention would make the action more rhythmical, but that is not the way in which rhythm is achieved. How many of us have tried repeatedly to perform some puzzling action, such as dropping a ring on to some particular peg, or causing a ball to roll into one numbered space? have we not definitely felt that the harder our effort to accomplish the desired movement, the less likely we were to carry it out successfully?

It might, however, have been possible by plotting the irregular course set up by the Law of Least Action, and discovering the forces that have produced it, to measure and control them, and to repeat the action experimentally with perfect certainty; but the more usual method of obtaining rhythmic movement in mechanical action is to ensure beforehand the conditions which bring about such movement. Force in measured degree and direction, and spatial movement along the path of least resistance and with perfect spatial freedom in Time—these seem to be the conditions required.

In some instances the Law of Least Action would bring about the complete disintegration of the object to which it is applied, as when we accidentally drop a delicate piece of china; therefore the homogeneity of the moving object and its adaptation to movement in Form and Structure are factors in ensuring rhythmic action. The direction of the force and the timing of its initiatory application are equally important, and finally the absence of excessive antagonistic forces deflecting the path of the object.

It is when we turn to the study of the forces underlying aesthetic rhythm, mechanical or organic, that the importance of these conditions becomes supremely clear.

In later chapters dealing with physiological and psychological conditions in rhythm the connection between rhythm and intention will be more fully discussed, and here also it will be possible to consider the enormous influence on human development of some of the rhythmic actions already described, particularly the rotary action which dominates the planetary system. The vibratory motion of Light, however, gives so perfect and fascinating an instance that it may be immediately considered, and in order to make an attempt at understanding it, three terms already constantly employed, need a more perfect definition. They are Space, Time, and Force.

Space is the extent of things, considered altogether apart from their succession—extension in all directions.

Time is the succession of things, and has passed on while the words in which we try to fix it are being written.

Of Force we know only that in the actions of our own body we call up a power of muscular contraction which accomplishes an action; lifting a weight or striking a blow. We are conscious of something which we call Energy at such a moment; of its nature in ourselves and in the universe we know practically nothing, and if we call it electricity, we have only given the unknowable another name. Modern scientific thought has united space-time into one relative conception. When we come to consider the motion of light, we find ourselves impelled to regard Force as equally relative, and united to Time and Space in the nature of its action. Light travels 92,700,000 miles from the sun to the earth in eight minutes. It travels by a motion which can probably be described as a wave-train, and is therefore rhythmical, and behaves as waves do, but "*in*" what are these waves? Physicists have coined the word Ether to describe the medium in

which they move, but the term could ill withstand a Falstaffian catechism:

What is Ether?

A word.

What is that word Ether?

That which is less than Air.

Where lies it?

Where else there is nothing.

Do we feel it?

No.

Do we hear it?

No; nor can sound be borne by it.

Do we see it?

No, yet through it we know light.

It is inapprehensible then?

Save of that which must stir in it.

How stir in it?

As a wave.

What is that wave?

To our eyes it is Light.

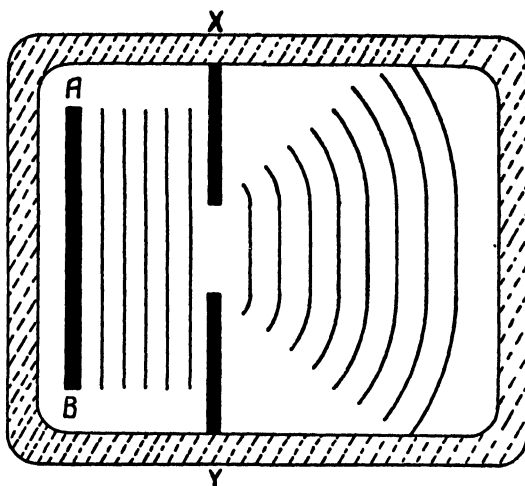
In what doth it stir?

In Ether. A goodly reckoning, and so ends my catechism.

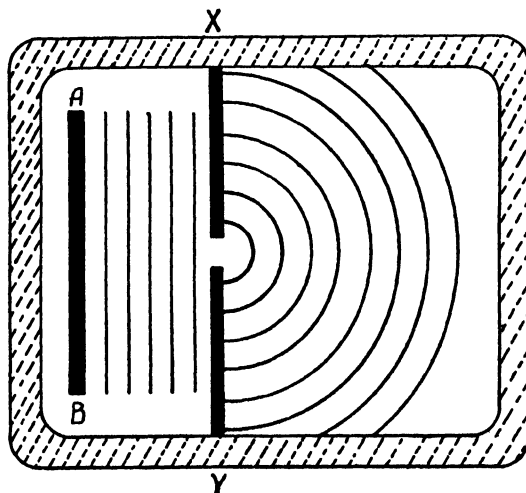
Under reflection, Light behaves as the waves of water do, striking back against the sides of a tank in circular ripples, recrossing the path of the entering rays.

But more wonderful by far is its behaviour under refraction, where the bent rays fan out as they bend and show us the glorious colours of the spectrum hidden within the united ray of white light.

On the wings of tiny birds and butterflies where the regular points of the small feathers catch the rays of light and bend them in this way with regular order, we get



I. A tank of water has a barrier XY fixed in it. On vibrating the bar AB ripples move up to the barrier which has a wide opening. As they proceed through the barrier to the other side of the tank the ripples continue for some time to show the shape of the opening. (Reflection.)



II. The barrier XY in this tank has a small opening and the waves take on a semicircular form on leaving the opening. (Refraction.)

Drawn by Charles Derring, Physics Lecturer on Lighting, Central School of Speech and Drama

the exquisite effect of iridescence, which contrasts with the pure reflected colour of flowers.¹

Beyond the possible visibility of Light, we come to the X-rays and to the world they have opened in the analysis of structure. Through them, above all, it has been possible to realize the symmetrical nature of crystalline structure, and its relation as pattern to rhythmic movement.²

The preoccupations of science know no limit in extent. At the one end, an infinity of littleness which almost transcends imagination. At the other, figures of largeness which remain to most of us inapprehensible, but throughout the whole range the sense of law and rhythm remains constant. The "laws" are indeed, as Professor Levy points out, rather explanations and predictions of the nature of action than enactments, while rhythm can best be described as an integrating force stabilizing the recurrence of action. The relative behaviour of the great wheel of the stars answers to the explanation worked out from the movements of the solar system and of the planets. The grouping of all bodies from the atom to monstrous Betelgeux shows the predominance of similar types of movement. The analysis of light through the spectrum shows us no unfamiliar lines.

Before passing from the consideration of Natural Law, it is necessary to remember that to the understanding of such Law we owe the greater part of man's mechanical invention. The course of these inventions can be reduced to certain simple elements.

First, the practical adaptation of energy: wind, water, heat, steam, electricity, dynamic explosion; second, the adaptation of the appropriate form to accomplish the work required from the adapted force: the lever, the

¹ "Diffraction."

² Sir William Bragg: *An Introduction to Crystal Analysis*, 1928.

wheel, the screw, the pendulum, the spiral, the crank, the valve, the magnet, the photo-cell; third, the nature of the motion required: locomotion, dynamic energy, illumination, constructive or destructive action. There follows the long evolution of the completed instrument, or machine; from the crooked stick to the steam-plough, from the paddle-canoe to the *Queen Mary*, from the handloom to the modern textile factory, from the fire-brand to the incandescent electric light.

What method can we perceive in this evolution? First, an ever clearer understanding of the nature of dynamic energy, and an unceasing search for its fundamental principles; second, an understanding of Form and Space with their problems of weight, stability, balance, measurable content, and dynamic mobility; third, an understanding of relativity in Space, as it is affected by Time and Motion, in the change from reciprocal to rotary motion, in the action of valve or of piston, in the compensatory balance of a lift.

Whatever the individual problem involved in a mechanical invention, the energy to be employed must be regulated and maintained. This enforces the idea of periodic recurrence as essential to Rhythm. Space must retain its bearings undeflected; the time progression of every detail of the mechanism must function without collision or incoordination.

In the study of crafts and arts it will be necessary to trace the relation between action of a rhythmic nature and static symmetry on which all harmony and beauty of construction is ultimately based. In the whole world of mechanical energy we have then to recognize the principle of rhythmic action.

In all these designs, the conditions for the repetition of the functions desired are deliberately determined and selected. The minimum of friction, the economy of

energy, the accuracy of space and time, are not merely desirable, they are essential elements—in general—to every detail of the construction, and invariably in the possibilities of its commercial success.

How deeply Man's mentality has been influenced by this perception and anticipation of rhythmic regularity it would be difficult to estimate. Psychologically, it compels our modern attitude to Life. With what dangers and with what inspirations we may discuss in Chapter VI.

If scientific study can be applied to the conception of Rhythm, it may help the interchange of ideas in the widely different fields in which the term is now employed, and prove its value in scientific terminology. Such a possibility must excuse the rather presumptuous inclusion of this chapter in a work on Rhythm at the present time.

CHAPTER III

THE DEVELOPMENT OF MAN

THE study of living things is still in its infancy. We acquire our knowledge of their nature in three different ways—first, by the world's history, written in the geological records of past conditions upon this earth; second, in the study of living types, with this arresting addition, that in the history of the individual, pre-natal and post-natal, and in the study of the comparative anatomy of all living things, we find recorded this history of Man's development, and of his links with the most primitive forms of life; third, by those sciences which concern themselves with Man's present existence upon earth, physical and mental, and study all mankind in that widest conceivable sense, which we term Anthropology.

In the present condition of astronomical and mathematical knowledge, the origin of this earth itself and of all the planets of the solar system, is conceived as having been due to the grazing collision of a passing star with the sun. The intruder and the sun itself spun out between them, from the gas of the sun's surface, the long filament of molten matter which condensed into our planetary system, and as it cooled and revolved in its incredible rapidity the existing structure of the worlds was moulded from its fragments.¹

Within the bounds of the solar system it is possible that the conditions of the earth, alone among the planets, are definitely favourable to the existence of life as we understand it. Large enough for its gravitational pull to retain an atmosphere, where the heat of the sun can set

¹ Sir James Jeans: *The Stars in Their Courses*.

up the alternate evaporation and condensation which makes possible the existence of living organisms, secured by its position in space from the extremes of heat and cold which would be fatal to all known physical existence, the course of the earth's history shows us three infinitely great cycles in which we may look for evidence of rhythmic law. The age of Fire and Cooling, in which no rhythmic phenomena but those of crystallization are conceivable; an Aqueous age, in which the teeming and multitudinous life of the under-water world worked out every problem of self-preservation; the emergence of the continents, with the animal story from amphibia to mankind. It is obvious that at many points the whole nature of living beings has depended upon the phenomena already discussed in Natural Law. To take one series only: the rise and fall of the tides under lunar force. We do not need to go further than the nearest clear pool on a rocky shore to see the sequence of activity and of rest, of feeding and assimilation, which is marked by the in-and-outflow of the tides.

The problem of gravity must have played its part in the biological failure of the monstrous Dinosaurs which dragged themselves through the depths of the primeval slime; but it is to Man that we must look for the logical culmination of all these forces, in order to explain his physical adaptation to a varied and perilous environment.

From the point of view of rhythmic action, the one vital factor in human history is Man's upright position. If we compare this characteristic with Man's other characteristic achievement of speech, it is easy to recognize that the second is an infinitely later acquisition. If one might imagine a human child fostered by some kind, wild creature, apart from all his race, we feel no doubt that he would walk upright. It is equally certain that he would acquire no known language; though, his inherited

capacity for hearing and for making sounds would probably cause him to be a very noisy young animal. The more recently acquired faculty is still profoundly unstable, and it would not yet be accurate to speak of it as in any sense "natural."

What lies behind Man's upright position? If we watch a small child in the earlier months of babyhood, we find him perpetually "feeling his feet," very often to gain the power of reaching what he sees. Even lying at rest upon his nurse's lap, he will thrust back his feet and push with extraordinary vigour as he tries to reach something attractive. A clutch at the light globe in the ceiling is as purposeful as a clutch to grasp a bright ball floating in the bath-tub. Everything grasped must be tasted, and the power of hand-hold is congenital. The sense of visual distance and the relation of one object to another begin through Touch, and the earliest efforts at upright standing are definitely acquisitive; to get hold of something just beyond reach.

What is the mechanical problem of the upright stance? To balance the body on a base with two gravitational points between three and four inches in length and less than three inches in breadth, each bearing together a weight about twenty-four pounds. On this base, with feet stuck firmly apart, has to be poised not a straight parallel structure, but the curved arc of a skeleton, and above it the heaviest weight of the whole structure, a swaying round head very delicately supported on the spinal insertion, and in a condition of such constant activity that stability hardly remains possible for more than a few seconds. The sleepwalker can balance himself at a height which would overwhelm him with giddiness in his waking moments, and carry out a series of quite rational seeming movements, but the moment complete unconsciousness empties the blood from the brain the

withdrawal of that vital energy sends the strongest and most perfectly trained athlete helpless and prone to the ground.

The sense of balance is vitally bound up with a sense of hearing, and the compensating power of two great series of muscles accomplishes the difficult feat.

If we stand with our hands palm forward and bend gently over from the hips, contracting hands and arms inwards and upwards and bending the head downwards, we are conscious that we are giving way to a series of contractile muscles from knee to chin in front, and cutting out the power of the erectile muscles at the back of our whole body.

But, if we lift a foot from the ground, we can feel that from knee to toe along the sole of the foot the process is reversed, and the flexor muscles are behind and the erectile muscles in front of the leg. On the balance of our muscles, not unlike the stringing of a great bow, depends the perfection of our upright stance. Their interaction shows us an example of rhythmic action in anatomical structure.

It is known as the Law of Reciprocal Innervation.¹ Every time the flexion of a joint occurs by reflex action a simultaneous inhibition of tone in the antagonistic muscles—those which naturally straighten the joint—takes place. Obedience to this law of rhythmic interchange is the fundamental principle of all good muscular movement. Everything of this kind in the human body depends upon the action of that network of muscles and of nerves which we call the Neuro-Muscular System. The lay-mind is fairly familiar with the idea of muscular action, and forms some idea of the nerves as the transmitters of vital energy throughout the body. But, in its preoccupation with the intellectual capacities of the brain,

¹ Sometimes known as "Sherrington's Law."

hardly realizes the dominance of the brain as the clearing-house of all human action.

The brain seems a thoroughfare for nerve action, passing on its way to the motor animal. It has been remarked that life's aim is an act, not a thought. To-day the dictum must be modified to admit that often to refrain from an act is no less an act than to commit one, because inhibition is equally with excitation a nervous activity.¹

In one of the most modern surveys of this brain action, a further analysis makes the rhythmic partnership of sensation and movement even clearer:

The cerebro-spinal system originates in the brain, and runs inside the spinal column in the hollow of the vertebrae. It consists of nerves of sensation, which carry messages from the surface of the body to the brain, and of nerves of motion, which in response to the sensations, carry out muscular movements.²

One nerve fibre, like an electric cable, can send messages inwards to the brain, and outwards to carry out muscular movement. It has both "afferent" and "efferent" fibres. The passage of these messages is described by Sir Charles Sherrington, with his usual brilliant intelligibility, as follows:

All impulses reaching the spinal cord from the periphery enter by the dorsal (posterior) nerve groups. Impulses passing outward to cause contraction in skeletal muscle leave the mammalian spinal cord by the ventral (anterior) roots. The discovery of this fundamental law of the roots is due to Charles Bell.³

The cranial nerves serve the five senses: sight, hearing, touch, smell, and taste. The cerebro-spinal system in its wider activities includes those classed as "voluntary,"

¹ Sir Charles Sherrington: *The Brain and Its Mechanism*.

² Bernard Hollander, M.D.: *Brain, Mind and the External Signs of Intelligence* (George Allen & Unwin).

³ Sir Charles Sherrington: *Reflex Action of the Spinal Cord*. Rede Lecture, 1933.

while the sympathetic and "involuntary" are those situated within the body, along each side of the spine and sending off fine networks of fibres which help to increase or to check muscular movements, but which also go to all the internal organs as well as to the blood-vessels and the glands.

The cerebro-spinal system controls, therefore, our voluntary and purposive acts and the happy expanding movements of the body, while the sympathetic system is associated with all those actions of the bodily organs which are happily carried on in unconsciousness, and have a certain painful and distressing character when we become conscious of them.

The rhythmic balance between these two systems gives us the perfect poise and vigour and joy of physical existence—the animal sense of delight in living.

The error of those systems of training, now fortunately almost obsolete, which aimed at exaggerated muscular development of a conscious kind, with a perpetual excess of muscular force in movement, was its tendency to destroy this balance between the conscious and the unconscious; it weakened the relaxing power of the muscles not in direct use, and the perfect correspondence of reciprocal innervation. Too much vital force was expended on mere muscular development, the balance of poise was destroyed, and a condition of muscle-bound rigidity often resulted. The rhythmic character of modern physical training avoids these errors.

Our capacity for balance and poise, for precision and ease in movement, depends primarily on the symmetrical action of the brain. The dual character of our body, with two feet, two eyes, two ears, and two hands, makes this essential. But the human brain is asymmetric; Speech, for instance, is primarily linked with its left frontal region.

We are, in the main, right-handed, perhaps because,

greeting the rising sun with a gesture of homage, our ancestors followed its course to the west with an outward stretch of the arm; perhaps because the left shielded the heart while the right thrust forward; perhaps nowadays because it is easier to write outwards, away from the body with the right, than inwards with the left hand.

In order to understand the function of rhythm in the establishment of our whole conscious and unconscious actions, it is most practical to select only two of our activities for closer study: the establishment and maintenance of the upright position and the growth of rational speech.

. . . Some 80,000 years ago, a new thing, a tool, not indeed Paley's watch, but a stone, shaped by and for the human mind, and a new animal sound, voice talking.¹

When children first begin to develop the rhythm of locomotion in the upright position, it is almost altogether dependent on physical balance. Very active small people develop an uncanny speed in hustling about on the floor, not always on four paws. A very interesting observation of a pair of non-identical twins, boy and girl, was made in regard to this: they had the tremendous desire present in such little creatures to be as different as possible from one another. The little lady ran about almost as agilely as a puppy, on knees and hands, and even more frequently than is usual, on feet and hands. The young gentleman sat firmly on a more solid base and employed his two hands and shoulder-blades to propel himself along in a sitting position, an action which suggested possibilities as a future oarsman. Their speed was almost identical, but the boy walked about three weeks before the girl. The girl talked first, and better than her brother.

The earliest upright walking is little more than an

¹ Sir Charles Sherrington: *Reflex Action of the Spinal Cord*, op. cit.

effort to save oneself from falling forward. There is no equality in the length of the forward hip movement, very little knee-lifting, and no relaxation of the hamstrings to help the upward action of the knee. It is a strut rather than a walk, and is so disturbing to the newly-acquired balance that it is frequently interrupted by rather painful reassertions of the law of gravity.

Neither force, time, nor space is mentally measured. If we merely contrast this early tentative walking with the exquisite movement achieved some seven years later, in the easy swinging gait of a youngster looking about him as he walks, with head erect, unconsciously adjusting himself instantaneously to every variety of ground, we realize the value of rhythmic training. If we needed further evidence of the rhythmic nature of this development, we could find it instantly in watching the change in the marching power of a tired squad of soldiers, when an inspiring march distracts their attention momentarily from fatigue, and times and harmonizes the whole action of the muscles in marching.

The following summary of the perfect upright stance may be helpful: the position should always be corrected from the feet up. The weight is on the front of the feet slightly more than on the back; the knees rather straightened than relaxed, but never rigid. Leaning forward and looking at the ground, the hips should be very gently drawn back, then raising the head and drawing the chin in very slightly, the arms will swing easily just in front of the hips. Any attempt to draw back the shoulders will stiffen the position; but after a few rapid "breaking and taking" movements of this poise, the shoulder blades will drop down into their natural position, leaving the chest free to expand and contract, and helping to keep the head upright. The weight of the head in any change of position should always be poised over the fixed foot.

All the vital processes of Man's body are conditioned by his upright stance. The late Professor Peter Thompson was once asked why we had more trouble than animals in regulating our breathing, and, after considering the question with grave severity for a moment or two, he replied, "Man is still very imperfectly adapted to the upright position." But, from the dim ages, he has been equipped with the rhythmic apparatus of circulation and of respiration, with the power of arresting the latter consciously, as in under-water swimming. The seal does the same thing automatically, and sometimes on dry land suspends his breathing for many moments together, as he has been in the habit of doing in his underwater progress; in Man the process is primarily associated with the lifting of weights, or any extra vigorous arm and trunk action, a condition which will require further notice when we come to discuss Speech.

It is plain that the faculty of sight stimulates our desire to be up and doing; we want to get at things; but it is not equally clear that our sense of direction and our power of holding ourselves upright is very closely linked with hearing. In the ear are three little canals called the semi-circular canals, concerned in the maintenance of equilibrium, which carry to the brain the impression of direction and directly maintain our sense of balance.

The variation in the pressure of the lymph inside these canals when in turning the head—the two canals working together—sends up a message which enables us to appreciate the movement of the head and our position in space. Will this power be of use to us in flying, as it is to the birds?

In the upright position the rapid turning of Man's head closely associated with this sense of position and balance enables us to judge accurately the direction of sound.

It is the development of the brain which distinguishes the structure of the family to which man belongs. Sir Grafton Elliot Smith, describing the development in the brain of the neopallium, which attains an enormous expansion and differentiation in the higher mammals, regards it as the organ of associative memory which permits the individual to learn from experience. Pathways lead into it from the tactile, the visual, and the auditory sense-organs, and these impressions of sight, sound, and touch, or any other impressions, are linked by the most intimate bonds to each other, and, it is believed, to a motor area in its frontal region.

The power of discrimination that resides, so to speak, in this neopallium, and is fed by the continual stream of sensory impressions pouring into it, which awaken memories of past experiences, can express itself directly in the behaviour of the animal through the intermediation of a part of the neopallium itself, the so-called motor-area. That area is not only kept in intimate relation with the muscles, tendons, and skin by sensory impressions, but controls the voluntary responses of the muscles of the opposite side of the body.¹

With the enormous gain in adaptability which followed on this increase of tactile memory, came the transformation which brought about the emergence of mammals. Every change in character that distinguished a mammal from a reptile is the result of increased variety in rhythmic bodily motion.

Mammals were brought into being as the result of the attainment of greater muscular skill.²

The direct connection of the neopallium with the cerebellum shows that a new instrument for effecting rapid and rhythmic movements has come into being,

¹ Sir Grafton Elliot Smith: *The Evolution of Man* (Oxford University Press)

² Ibid.

because of the possession of an organ of associative memory and rapid action. The whole foundation of adaptability lies in this attainment of skill.

The problem of the relation between muscular activity and function and structural change is still too indeterminate for summarization; but it is expressly implied by students of comparative brain anatomy that the neopallium presents the beginning of the process of "Building up a very complex co-ordinated mechanism in the cerebral cortex for the attainment of skill."¹ It would seem essential here to quote a passage from the same author with regard to the supreme problem of all the links between brain and mind:

What right have we to conjoin mental experience with physiological? No scientific right; only the right of what Keats, with that superlative Shakespearian gift of his, dubbed "busy common-sense." To many of us, a mere juxtaposition of the two sets of happenings proclaims their disparity. On the one side, changing electrical potentials with thermal and chemical action, making a physiological entity held together by energy relations; on the other, a suite of mental experiences; an activity no doubt, but in what, if any, relation to energy? As for me, what little I know of the "How" of the one, does not, speaking personally, ever begin to help me toward the "How" of the other. The two, for all I can do, seem disparate and disconnected.²

One of a group of tiny mammalia took to the trees; agility and quickness of movement grew more and more important; the sense of smell ceased to be so useful, and large areas of the brain were given up to the visual tactile, acoustic, kinaesthetic, and motor functions, and to their blending into the consciousness which we call Rhythm. A tree-life added to the importance of a sense of hearing, presently to be vital. Seeing more, curiosity

¹ Sir Charles Sherrington: Rede Lecture, 1933.

² Sir Charles Sherrington: *ibid.*

to examine all that was seen as closely as possible supplied guidance to the hands in more and more precise movements. The human hand is an instrument of rhythmic action; through it comes our whole capacity for the production of craft, of design, of art, and of instrumental music. The two eyes now work together, the only way of fixing keen attention on a thing to be studied. So are gradually coming into existence the foundations of that great frontal development of the human brain which Man veils behind the development of his forehead:

We have gone far enough, however, to be certain that Man is what he is, because of his brain; his peculiar foot, his dextrous hand, and his upright posture, are but human accessories. The central problem of Man's evolution is the rise of his brain in size and in complexity. We know the size and convolutionary pattern of the brain of modern Man. We have reason to believe that two aspects of his brain, the structural and the psychological, are interdependent.¹

Our ancestors never fell into the determinate development of a highly specialized and safe skilfulness, what one might almost call a Circle Evolution, in which each generation was content to carry on the splendidly successful round of savage existence. Over-specialization gives the impression of such a circle, as opposed to the spiral rise which always breaks out into a higher plane. The fight between vision and smell was a long one, and even to-day smell calls up an associative memory, a direct meaning which neither of the two "distance receptors,"² Vision and Hearing, possess. It represents the first germ of associative memory in animals.

Now, at last, the erect attitude of Man has become possible. Skill and balance are within the scope of the

¹ Sir Arthur Keith: *The Antiquity of Man*.

² Sir Grafton Elliot Smith: *op. cit.*

highly-developed brain; the movements of the hand is so skilful that there is no need for more than two; sight demands a greater elevation. Yet we must recognize that the full perfection of the upright stance is not associated with primitive examples hitherto discovered. It may even possibly date from the dawn of Speech itself.

Man spoke when his mental development reached a point when he had something to say, and as Mr. V. E. Negus has pointed out, he made the best use possible of the apparatus he possessed. There were many obstacles. The larynx which was to be the organ of voice had other functions to fulfil. It was primarily an apparatus to guard the entrance to the respiratory system during swallowing, and it plays its part in the fixation of the thorax during effort; though it was supremely adequate for phonation, many changes were required to make true rhythmic utterance possible.

It would be out of place in a book of this kind to do more than offer suggestions as to the link between structural development and function, but in considering the synthesis which is accomplished physiologically in regard to Speech, the following brief survey of the modifications which have definitely been traced in the history of mankind, as they relate to posture and utterance, is important.

While man's vocal apparatus was, in fact, adequate for phonation, it is interesting to notice how the skeletal changes in his evolution have so often been of a nature to assist the more strictly voluntary actions of speech. The final assumption of the upright position and the reduction of arm effort has reacted favourably on tone, and is associated with important cranial modifications, all favourable to speech, (1) the more forward position of the Foramen Magnum (the insertion of the spinal cord in the skull) and the change in its angle of insertion, so that it is nearly central and vertical, permits

of the perfect balance of the skull, the more vertical angle of the larynx, and the lowering of the back of the tongue; (2) the shortening and rounding of the palate to a length hardly exceeding its breadth, the breadth being greater at the back, coupled with the greater arch of the hard palate; the reduction in size of the teeth, and their arrangement in a regular curve, all allow room for resonation and for the tongue tip action; (3) the lower jaw develops a point of more exact and definite attachment which allows greater control and more exact vertical movement; (4) the jaw itself is lighter, and the development of the chin allows the tongue to lie forward and low under the level of the lower front teeth while leaving the throat muscles free; the most favourable position for phonation; (5) the shape of the jaw changes from prognathous to orthognathous, a change effecting sibilants and the higher articulatory resonances in consonants and vowels; (6) the angle of the mouth and nose cavity gives more exact balance between the nasal and oral resonation; (7) but above all, we have the development of the frontal arch of the skull over the frontal lobe of the brain, which, to quote Sir Arthur Keith, "we have reason to believe is in some way concerned with the power to give utterance to thought." The voluntary elements of muscular action in speech lie in the jaw, the tongue tip, and the lips. To these may be added the control of respiratory action and of relaxation and freedom from tenseness in all the external muscles of the throat and tongue.¹

In the majority of Man's activities quickness and accuracy and body balance play an ever-greater part, and we recognize at every point the influence of Rhythm. In Chapter VI this will be related to the history of Games, but rhythm is the very foundation of ordered speech.

From the more lately developed temporal area there is a most intimate connection with the automatic regulation mechanisms in the lower parts of the brain, which avoids the fixed rigid position unfavourable to skilled action, and which also regulates the action of those portions of

¹ E. Fogerty: "Speech Training Symposium," *British Journal of Educational Psychology*.

the internal ear involved in equilibrium, balance, and direction. In this close correlation, Sir Grafton Elliot Smith suggests that we have the factors determining the vast significance of rhythm in human activities:

. . . not merely in the performance of many consciously skilled movements, but in particular in Man's ordinary locomotion and such special variations of it as running and dancing. The rhythms of music and of movement are perhaps brought into harmony by the activities of the temporal cortex, which is both the receptive area for acoustic stimuli and the executive area for regulating the rhythms of posture.¹

The conditions here exist which permit the true development of aesthetic action; the voluntary movement repeated till it becomes automatic, that is to say, a rhythm associated with the whole action required. Ultimately a "Conditioned Reflex" is developed. The attention is free from the whole technical accomplishment required and can concentrate on its artistic significance.

There is one point of view which should be emphasized in regard to the tremendous material brain transformation which has been here described. Man's capacity for locomotion is in itself nothing remarkable. Compared with the swiftness of the deer, the grace and precision of many wild animals, the strength and stealthiness of the great cats, the intimidating splendour of the lion, he is clumsy, weak, and insufficient in the controlled intelligence of action and its variety of adjustment; the swooping falcon or the exquisite flight of the wild swan stooping to

Paddle in the cold companionable streams²

solve problems which Man has never completely tackled in his own person.

He appears to be aware of these failures, for whenever

¹ Sir G. Elliot Smith: *op. cit.*

² Yeats: *The Wild Swans at Coole.*

he wishes to be swift or imposing, he borrows the four legs of the horse, or has himself carried in a palanquin, or rides on the back of an elephant or in a chariot. It cannot then have been a mere difference in complexity of gait that brought about the startling and, geologically speaking, rapid change in brain development recorded for us in the history of primitive Man.

It was not the motor machinery so much as the telephone exchange¹ which needed enlargement. If we try to analyse the difference in the whole nature of the activity, we realize it was rather his infinite capacity for co-ordination, his capacity for carrying on rhythmically automatic action while consciously appreciating its rhythm and employing it to definite and varying ends. Here Oedipus's great riddle sums him up. He walks on four legs in youth, on two in manhood, but when age or infirmity afflict him he has the capacity to devise a third leg in a stick, a crutch, or ultimately a motor car.

Conscious appreciation of Rhythm, in the form of a study of its repetitions, is one of the great pathways to his end. The great cats have gone a long way on the road in "playing" at the hunting by which they live. Birds teach flight to their children and possibly song, for which they have evolved a special musical instrument. If none of these combinations has necessitated the evolution of such brain relations as Man has achieved, it may be along the line of self-consciousness and love of variety, combined with purposive direction, that we should look for an explanation of their complexity.

In one of the finest modern books on Mountaineering, Mr. Winthrop Young describes the principles involved in what is the most arduous form of locomotion known to man. Its development is similar to that of every form of sport or adventure which is based on bodily movement

¹ See above, p. 48.

and the steady perfecting of skill in action: a desire to heighten and prolong the sensation and exercise the improving skill upon more and more difficult variations; but the author has come to his complete understanding of the place which Rhythm plays in such action under conditions where life itself may depend on perfect accomplishment, and this gives his conclusions a particular importance; he attributes man's conquest of the great rock climbs to:

The discovery that the whole underlying principle of all climbing movement is rhythm—a rhythm of the whole body and not only of the legs as in walking, and that the basis of such rhythm is balance and not grip, or stride, or struggle.¹

With the recognition of this principle, he maintains that:

Before nerve and sinew are alike fit in training, they can establish no rhythmical co-operation with one another, or with the brain.

He puts into one vivid phrase the delight which makes all great hazard worthwhile:

The mystical moments in mountaineering, which are the source of its fascination for men of intelligence and imagination, are found more easily in solitude. Their intensity is increased by the rhythm of climbing, the rhythm of mind, nerve, and muscle working at the same high tension, to the same deep tune.

He compares the action of a good dancer, who has to adjust the continuous motion of his feet and body over an even surface to the swift and varied rhythm of music, with that of a good climber, who has only to keep time to his own rhythm, and points out that the sense of comfort and ease in climbing is the test of the degree of balance and rhythm acquired, while the adjustments made must be instinctive; it is by such rhythmic action

¹ G. Winthrop Young: *Mountain Craft*.

that the harmonious adjustment of team work required in the more difficult problems of rock climbing and rope control also attain their most perfect solution.

What may be called almost an experimental demonstration in history lies before us in the achievement of Greek art.

The plastic fixation of the perfect human poise, from the physical point of view, in sculpture was dependent upon the rhythmic nature of Greek athletic training. The perfect speaking apparatus was found in the relationship of skull structure—forehead, nose, jaw, etc.—with the beautiful flexibility of the trunk muscles, trained in the right type of athleticism, in which rhythmic dancing and perfect speech were included.¹

Living in a country which made possible the most balanced aesthetic life ever enjoyed by man, a brief period of aesthetic illumination followed. Speaking in terms of evolutionary time, human speech was eventually carried almost at one bound to absolute perfection; a language was created in which the elements of force, time, and pitch were exactly balanced and maintained, in which quantity—the duration of sound—and tonic accent—the significant use of pitch—were regularized to common use.²

In the freshness of that world, a social place was given to the rhythmic arts of dance, poetry, drama, oratory, and prose composition, and they achieved a perfection to which the opinion of all succeeding time still applies the term "classic." A mythical and anthropomorphic faith, savage and coarse in its origins, had become a triumphant banner for nationalism, and expressed itself in a practice, architectural, ritualistic, and philosophic, which has never been more humanely sensitive to Beauty.

We know in every detail the type of human intelligence

¹ See above, pp. 51, 52.

² See Chapter V.

which took advantage of these conditions, its greatness, its subtlety, its perfection as an instrument of dialectic and of rhetoric. It was to become the instrument of giving to the habitable world first the revelation of plastic, poetic and dramatic beauty, and later the glorious form of the revelation, confided to a sterner and narrower race, in the Greek scriptures and the liturgy.

CHAPTER IV

RHYTHM IN THE MIND AND ITS PROCESSES

AT what moment in our lives do we first become fully self-conscious and take the first step along the road which leads to knowledge of ourselves?

Cogito ergo sum.

At some moment, surely, everyone has first experienced the recognition of this fact, but probably the instant is seldom remembered in detail. One such experience, carefully authenticated, may be of interest. Rather a solitary child grew up in the most perfect of all environments, a lovely garden, worked by a kind old Adam, who discoursed very simply and wisely on all things, vegetable and animal, and on how they grew. At the lower end of the garden was a great field, and one early summer the old gardener cut away the grass sods and clipped a space in the turf to surround a garden about the size of a dining-room table. It was to be a personal possession, and seated on a turned-up flower-pot, seven-year-old gazed at its rather exotic vegetation: musk, which still had its scent in those days, two scarlet geraniums, some blue lobelia, a stick up which trailed a yellow twist of *canariensis*, and, most wonderful of all, springing out of a hidden pot sunk in the ground, a lovely greenhouse primula with its purple blossoms in full glory. Watching this wonderful new possession, after exhausting efforts at gardening, the child's eyes looked up and saw the sky overhead, the great field, the little tiny space belonging to . . . herself. Suddenly came the realization: "This is ME;" and in terror, her small legs

carried her indoors to the company of others, to escape the fear of individual loneliness. The impression was never forgotten, and the "I" feeling came back regularly, more especially when some long course of abstract thinking or historical research had made the world seem very large and rather intrusive, bringing, with an overwhelming revulsion, the feeling: "It is I, myself, who am thinking about it all."

The study of the human mind, as distinguished from the study of the functions of the brain, is the province of Psychology. Nevertheless no one to-day can pretend to assign rigid limits to the two fields of knowledge. If we pass in review the function of the general physician and his intimate concern with human behaviour; the function of the neurologist with his physiological and mental study of all the pathological conditions which influence the brain, the sum of human behaviour, and the mind; and if we then turn to the student of pure psychology, where can exact limitations be imposed on their separate provinces? These considerations make it particularly important to attempt an outline of the relationship between Rhythm and modern psychology.

It is natural, in view of the history of the different sciences, that the psychologist has tended to concentrate on the unconscious in man's mental make-up.

From this point of view the relation of psychology to rhythm is implicit in the terms of our investigation.

The psychologist has probed with special care into the maladjustments of the human individual, as shown in his mental reactions and in his behaviour. Over the widest possible range of human experience the difference between adjustment and maladjustment is a question of Rhythm. Mental fixation expressing itself in physical tension, faulty establishment of conditioned reflexes or habits, false automatonism in continuous occupational

movements—and, through the whole series, the substitution of deliberate effort for unconscious deftness. These things are the very groundwork of psychological practice and theory.

The fact that this study of Rhythm attempts very superficially to cover not merely the aesthetic or athletic manifestations of Rhythm, but its relationship to the whole conception of action, may possibly make it of value to the psychological expert. In this one chapter an attempt will be made to relate Rhythm to three only, among the wide range of the manifestations, which concern the psychologist.

1. The establishment of kinaesthetic memory.
2. The establishment of a conditioned reflex.
3. The nature of instinct.¹

Man's perception of the temporal aspect of the universe is a perception of succession, but succession in what?

We have no sense whatever of the absolute flux of time. A man on shipboard, in mid-ocean, with sun, moon, and stars invisible, and sailing with a strong current, has no sense whatever of progression in that current or in the waters which surround it. The presence of floating driftwood will at once supply the point by which progression may be relatively determined. We feel ourselves at every moment fixed at a point which we name "The Present." Behind us is the scroll of the Past, every line of which has taken part in our advance to the Present; before us a second scroll, that of the Future, unrolls itself without pause, and again transforms itself into the Present. What we can foretell of the Future—and it is a good deal—is only rhythmic. We can look in next year's calendar and make an engagement a year

¹ See Introduction, pp. 22-23. .

ahead for a given hour at a given moment. The Astronomer Royal can gather his scientific company, charter a steamer and sail away into the Pacific to witness an eclipse which he can "time" to the fraction of a second. We can "expect" more loosely all the general events of our occupation so far as it follows a constant rhythm.

In those closely at one with Nature, this anticipation almost becomes "an instinct," for weather, for the nature of the harvest, for the doings of the creatures man cares for. Sometimes one is tempted to think that a similar instinct can develop in those who are concerned with the buying and selling of the world, and its commerce. The fact that it cannot profitably function in those unrhythmic combinations which we call "Chance" may be a source of regret to all confirmed gamblers.

But our sensation of Past, Present, and Future is only memorized and perceived by a series of cinematograph pictures of change in our surrounding world. Time, to us, is only the alteration in ourselves and our surroundings, studied in succession. Bergson expresses this in a vivid metaphor:

Wherever anything lives, there is, open somewhere, a register in which Time is being inscribed.¹

How did this consciousness of time and of timing develop in living things, how did we personally acquire it, and how do we maintain it? Obviously through the existence of recurrent and rhythmic action alone. In a world where nothing ever happened again, no point would exist from which to number time; no possibility of the development of memory, of habit, possibly even no growth of instinct. An illustration presents itself in our perception of the most obvious of natural laws.

The rotation of the earth in a regular, rhythmic

¹ Henri Bergson: *Creative Evolution*, Chap. I, p. 17.

periodicity is the fundamental fact of natural law to those who live upon it.

Of this rotation itself we are completely unconscious, like the men on shipboard moving in their current; for hundreds of years the very possibility of such a movement was denied,¹ and even to-day we are a little startled when we watch a scientific experiment demonstrating it. What we are conscious of is the change which this movement brings about in our relation to the heavenly bodies. The whole of human consciousness, from the earliest instant of our recorded time, has been preoccupied with the rising and the setting of the sun and moon, and the phases through which the moon passes. Religion and philosophy concentrated for untold centuries on the appearance of the starry heavens, and the succession of the changes seen there. In this great series of rhythmic movements we have in effect a gigantic clock, marking off for us a triple division of time, a second hand of nights and days which, though they are continuous and gradual, still appear to us under the cinematograph titles of Morning, Evening, Day, Night; an hour hand of the changing seasons which takes twelve months to complete its round, with the lunar cycles ticking off each of those months for us like the striking of the quarter's chime. This, in itself, would have been sufficient to fix man's attention on the problem of succession, which is our ordinary concept of time; but in reality this majestic procession is not merely metric; it is the causal basis of all life upon the globe; it governs the successions of activity and rest, which are the rhythms of life. It controls the alternatives of heat and cold, of moisture and dryness, which make life possible. In the tides it dominates all sub-aqueous or shore life. We have but to study the distinction of deep-sea, estuarine, and tidal zoology to

¹ Till Copernicus: *De Revolutionibus Orbium Coelestium*, 1543.

understand the enormous implications involved in what our fathers regarded as an interesting pageant created for the joy of mankind.

The changes and succession which mark for us the succession of time, even in our own bodies, are created by the rhythm here described. The changes in our diet, the mating season, the struggle with cold and inclemency which traced a path for us from the cave-dwelling to central heating, depend on our response to their stimulus, and at every instant the preoccupation with time emerges. The strange study of astrology which fascinated the East and sent the Magi to Bethlehem was—when it had any scientific character—an empirical attempt to grasp and to tabulate every movement and every “influence” in the rhythmic motion of the heavens. Through one of those fascinating conjunctions by which man is led on by the hope of an immediate advantage to pursue a heart-breaking intensity of study, the hope of foretelling the future was the bait which incited centuries of tireless calculation and investigation in this direction, and out of which the science of number and the earliest attempt at mathematics emerged in India, in Persia and in Arabia.

Living creatures which follow a course of automatic action need no clock; they sleep or wake, eat, migrate, mate, by something to which we give the cipher name of Instinct; but directly Man abstracts himself from Nature, he needs a time reckoner; a little vessel filled with running sand to tell him how long it takes to cook his food, a sundial to cope with the irregular length of days, a chronometer to measure the motion of the planets. We cannot hear the flux of time, but we can listen to the chimes at Westminster, or ask the telephone operator for a time signal. We have watches exact enough for scientific experiment, and to almost every proposition

which is offered to us we propound the query, "How long will it take?"

Once again, not one of these contrivances possesses the slightest validity unless its action conforms to what has been formulated here as the law of Rhythm: the rhythmic laws of nature, then, have made possible man's appreciation of the flux of time. Does it ever appear to the animal world in any other way than as a change, gradual or sudden, in surrounding circumstances to which he makes an "instinctive" response? Memory of action—kinaesthetic memory—is due to the recurrent sense of energy and relaxation, to the impressions made by visual, tactile, or auditory perception of space time.

The suggestions behind this study of time are infinitely too long for discussion here. But the scientific psychologist may feel disposed to follow them further.

Throughout the whole of this book two observations will be constantly repeated: first, that rhythmic action, in which force, time, and space are harmoniously balanced, is the only action which becomes habitual, the only action which sets up the sum of kinaesthetic memory out of which grow habit and automatonism; second, that this automatonism does not destroy, but stimulates the power of independent action in man, and that when it is sufficiently universal and sufficiently fulfils the necessities of function it may establish an inherited characteristic, or one which is acquired without teaching at a very early age.

To such acquired actions which have allied themselves with biological necessities or universal human activities we give the name of hereditary instincts. It is doubtful whether in effect the ordinary subdivisions are scientifically necessary, and whether it would not be sufficient to distinguish between a vital impulse finding expression in certain tendencies, and its antithesis; a

principle of disintegration and death. That this classification would correspond closely with the general rhythmic order of the universe is clear, but for the purpose of this present inquiry into inherited and acquired tendencies a more academic classification may be adopted. It distinguishes:

1. The instinct of self-preservation.
2. The herd instinct.
3. The instinct of sex.
4. The parental instinct.

1. One example of each may be sufficient. The migratory instinct is almost the greatest development of the desire for self-preservation. An animal moves over into the shade on a hot day; stands up out of the grass when it is cold; works its way down into the valley when the mountain pasture grows thin. Perhaps it does little more at first than "eat its way," but when disaster overwhelms its common feeding-ground the strong of the flock go further afield and survive.

Geographical conditions arrest the progression of animals, but in the ocean motion is so completely accommodated to environment that there are no barriers but the sense of well-being to progress in any direction, and in the air, birds know the freedom which is just making us realize the glory of flight. Here, the migratory habit reaches the perfection which is so startling. Those who stay behind are either more adaptable or more phlegmatic as many a wily old trout has taught an angler, even while the salmon blindly returned to its doom.

In a much more visible manner we have the long progression of weapons of defence, hardly distinguishable at first from weapons of industry. They follow a double rhythm, the rhythm of aggression and attack, and the rhythm of defence and protection, in an unending duel.

Each new invention on the one side countered by a step forward on the other.

The weapon accurately reflects the social tradition of its period: the cave-man with a stone or a flint axe; the champion with a sword and buckler of individual excellence; a "Durandal" or an "Excalibur." Each had its necessary rhythmic study of use. The fine gentleman achieved in rapier play and in the art of fencing a mathematical perfection of rhythm, one of the most beautiful things the human body has ever accomplished, a thin ribbon of steel shielding from attack every inch of his person almost at the same moment that it penetrated the defence of his enemy's guard. Now much of this primitive defence has become a game; the serious thing is hatched in a laboratory and administered by a machine or a mechanized unit.

The developments of medical science, of social hygiene, of psychology itself, show the rational and rhythmic progression of the instinct of self-preservation, sublimated to the intellectual level.

2. The herd instinct has taken up the discoveries of this primitive series and made them its own. Here we come closer to the establishment of a closed rotation of habit, where automatonism from some obscure reason becomes completely self-sufficient for life, leaving no margin for dangerous failure or fortunate success. What one may call the "Circle" instinct, as opposed to the Spiral, which always leaves an escape into a fresh line of energy.

"*Look to the ant, thou sluggard!*" Yes; to see first how persistent industry develops an automatic facility which makes labour easy; to see how co-operation makes effort so simple that it tends to become motiveless, and to discourage initiative; to see how few and how uninteresting are our actual necessities, how self-sufficing the

individuals of a well-ordered swarm become. All the valuable and yet all the intolerable lessons of an overspecialized community life at a low level of development; but look, above all, at a terrible and almost diabolical warning. What initiative remains? To be born, to function from the first instant of mature life in one appointed caste; to hoard supplies unselfishly for the communal use without individual taste or enjoyment; to obey unquestioningly an inner servility, to die as unquestioningly; to destroy blindly, automatically, all that lies in the way of an appointed task. To have just that measure of termite intelligence which directs the force of automatonism into a blind obedience to the machine, to mate without emotion, to reproduce without affection, to know no stimulus of want, to accomplish no surplus of achievement. Čapek's genius read the formula aright.¹ At the best a blind excess of production can be directed to storing up a superfluous mass of sweetness for the delectation of an alien and indefinite deity, at its worst it is the monstrous termite blindness destroying the inner nature of anything living or dead which it encounters, —“sans taste, sans everything”; yet, out of the dead stop of insect life, where evolution ends in a seeming blind alley, one rhythmic sequence has established the fertilization of plants, another the horrors of malarial disease.

How is herd movement accomplished? What unseen order drives the flight of the cuckoo and the swallow, and regulates the incredible life-history of the eel? Is it possible to find any significant analogy in the cultivated herd-instinct of human beings? Whenever migration or movement of large bodies of men becomes necessary, how do we evoke the capacity to perform these things? By a precision of rhythmic action which verges on the

¹ Čapek: *The Insect Play*.

nature of a dance. The perfectly drilled squadron of soldiers needs no music to keep step, no drawn lines to keep formation. The migrant human tribes did not all pour on blindly like the horde, they rode, they danced, they marched their way to victory. "Rome's race, Rome's pace," conquered the world. Watch a shoal of tiny fishes. Is it not the perfect rhythm of their motion which enables them to move like one creature to and fro in their tank or in the depths of the sea? Is it not possible that the spatial, temporal, and energizing training which marks the chorography of a great ballet may have had its parallel in the physiological necessities of bird flight, and may it not have developed from tentative effort, through rhythmic security, to fixed kinaesthetic memory, and from kinaesthetic memory to an automatonism, at first partially, and at last completely instinctive?

The comparative profundity of the capacities of movement and of speech referred to in Chapter V suggests a possible explanation of hereditary instincts. Some still require "practice," some have become completely congenital.

3. Sex instinct is rhythmic at every stage of its expression, physical and emotional, in movement and in periodicity. Nearly every creature has its dance and its love-making, and a glory of pattern in its attire to please the bride.

Is it not the profoundly vital character of this fundamental instinct, this "will to survive," which has led one school of modern psychologists to regard it as the only true expression of the Unconscious in Man, and the explanation of all other instincts? The behaviour and the sublimation of the life force which it evokes at all stages of animal development provide some justification for this view; yet, is it not equally true that, when the sex instinct becomes completely self-sufficient, the circle of

arrested development and degeneracy is its inevitable penalty?

More than any of the other instincts, it finds its most perfect expression in the discipline of sublimation which breaks its tyranny. As we find that when force is prominent Rhythm sinks to mere repetition, and disintegrates instead of harmonizing, so the overwhelming force of instinct destroys all selective variation. The test of perfect rhythmic capacity in human action is the freedom it allows to the mind. Not the obsessional power it exerts during its operation. Maladjustment is due quite as much to excess of energy in meaningless expression as to the inhibitions of repression. Witness the history of occupational neurosis.

4. Even the last and highest, the instinct of parental love, must face this test of mental release. It can destroy more utterly than hate when it absorbs the whole nature of its votary, and reduces its object to the level of a parasite, or to the reactions of blind antagonism.

Are we justified in claiming that intelligence plays a part in the primal establishment of instinct? Do we not also find that once a habit is formed we let it carry on and give our intelligence to something novel? Is the closed circle of habit not a dying by habit, so far as evolution is concerned, and spiral progression the rhythm of life? The subservience of biology to the geometric reasoning of determinism seems to have taken too much for granted.

Bergson has pointed out that in order to follow instinct there is no need to perceive objects, it is enough to distinguish properties. Intelligence is presupposed when we admit objects and facts.

The more consciousness is intellectualized, the more is matter spatialized, so that the evolutionist philosophy, when it imagines in space matter (already) cut up on the very lines that our action

will follow, has given itself in advance, ready made, the intelligence of which it claims to show the (actual) genesis.¹

The perception of time and space in their required relation to action creates rhythmic accomplishment. Another aspect of that feature of the herd-instinct which sets aside the seed for next year's harvest—an instinct of self-denial—is found in our dedication of a large section of our herd-instinct to the preservation of beauty in aesthetics, of ritual in religious life, of behaviour in social life. In this we permit ourselves definitely to distinguish between the advantage and the danger of habit, and between good habits and bad. We have finally rejected the theory of propitiation for punishment or reward, in favour of sublimation through the reality of spiritual experience.

Bad habits seem to imply the acceptance of automatonism on a lower range of evolution than our own; the adoption of a completely automatic and instinctive circle, where the satisfaction of an animal instinct instantly provokes the repetition of the action, without choice or initiative (as in a chain cigarette smoker); finally the reversion of a higher organism to a lower type. To be a slave to habit is the acceptance of the closed circle without exit to a higher level; then the mental inco-ordination of fatigue or fear destroys an established automatonism, and results in anxiety about some simple progression, as in the stammerer's fear of speech.

Would it be reasonable to say that Instinct is the survival of a profound automatonism harmonizing with the surrounding environment of a type; and that at a higher level the individual creates his environment by harmonizing his intention to instinctive rhythm? Man, for example, struggles blindly and drowns where a seal

¹ Henri Bergson : *Creative Evolution*, Chap. III, p. 199.

revels in the element suited to his type. But man can *learn* to swim in the most varied rhythmic perfection, and to adapt the rhythm of waves and winds to the triumphs of his art of navigation.

Touch is the fundamental perception of living things. It antedates, from the evolutionary point of view, all the other senses, which may indeed be described as the development of more and more sensitively organized reactions to finer vibrations in *light* and in *sound*. Any subconscious action may be regarded as responding to kinaesthetic memory; the sum of vital energy sustains all such automatonisms and its withdrawal means death.

Man has passed through the stages of complete satisfaction in animal sensation, in taste, and in smell, to the visual mastery of the universe of Light, of Form, and of Colour. Finally, in Poetry and in Music, to the imaginative re-creation of the world in terms of Rhythmic Sound.

The significance of Rhythm in this aesthetic solution is the subject of the remaining chapters of this book.

CHAPTER V

RHYTHM IN SPEECH

IN what direction must an investigation into the rhythm of speech be carried out?

It is obvious that we are dealing with a human activity fundamentally different from those so far considered. There is no need to labour its inclusive character, since everything so far discussed in this volume has been clothed in words and ordered on some logical theory of languages.

It is plain also that on the side of its Sound problems, Speech relates to Natural law; in the mechanism of utterance, it relates to the whole of man's biological history, and to his individual physiological and psychological development.¹ More especially, it is connected with nearly every point of present controversy in regard to the structure and function of the brain. From another point of view, it is the foundation of social life, a means of communication through a significant "code" which we call Language. The symbols of that code are Sounds, Syllables, and Words. Its extent constitutes our "vocabulary." The logical order of these words in syntax and construction forms our sentences; and from them derives that custom of utterance, idiom, and structure which we call a language. The tune to which we set our words is the cadence of this language. In the habitable globe at present it is estimated that over five hundred and fifty languages are spoken, without any attempt to tabulate the variants and dialects which can claim wide differences of vocabulary, and of which twenty-four have just been recorded in England alone by the British Drama

¹ E. V. Negus: *The Larynx*, and W. A. Aikin, M.D.: *The Voice*.

League in quite a narrow series, for the benefit only of people interested in drama.

Speech is man's art of being human; in the problems of its interchange between Utterance and Content, it still leaves us bewildered; do we think in words? When do words suggest thought? How does thought call up words? The matter and the manner of speech, our sense perception and our sense expression, the standards and the nature of the kinaesthetic memory necessary to both understanding and expression, all these are within the mind of man as it dominates his physical being.

But when the question of intercommunication has been considered, we have then to examine the aesthetic developments of speech; in song, lyric verse, oratory, and drama, we are in the presence of some of the greatest and certainly the most imperishable achievements in the history of mankind.

The very silences of a great speaker become significant. Speech is at some time or another conterminous with the whole mental and emotional experience of our being, and of our attitude to life.

Speech originates in a mental content, however small, seeking expression; it finds its way through the problems of utterance, vocal and articulatory. It becomes significant through sound, words, and the whole structure of language. The record of all this is expressed in a second code; that of the visual symbols of writing. First, only a picture language, or hieroglyphic, clumsily needing a symbol for every thing and for every action. The next great step was soon taken; the realization that in any language there are not much more than fifty distinct and separate sounds, and that therefore these sounds can be recalled kinaesthetically by the sight of a limited number of symbols, which express them all, and can be grouped to convey vaguely the whole sound of a word.

Then, the speaker became analytical, conscious of the "phonetic" character of his speech, of the distinction between its vocal and frictional sounds, which we roughly tabulate as vowels and consonants. Speech became an art.

The actual nature of utterance escapes altogether from the current tabulation. Even now we are not aware whether we are speaking in a high or a low key, or what shade of significance the grouping of the sounds indicates. Gradually, fresh symbols and conventions are added, and it is plain that the structure of utterance is as profoundly influenced by writing as the structure of music by the invention of musical notation. Later the most finished of mechanical inventions translated this written code into print; to-day the wireless disperses it over the world; the gramophone record supplies the one deficiency of the press, and imprints the very quality of utterance on a microscopic groove.

Fortunately for mankind, the aesthetic uses of speech—song, lyric verse, oratory, and drama—long preceded any fixed and linguistic study of utterance, and so the tradition of great speech remained unacademic, controlled only by the laws of its rhythmic beauty and of its emotional and dramatic significance. To-day the knowledge and practice of written speech in all its mental and physical forms represents for us the lifework of prophet, poet, and philosopher, of thinker and fool alike. The activities connected with it, the influence it exerts, the volume of its re-creation of thought and action, may possibly outweigh all the rest of man's activities, both in duration and in extent. In its degradation, speech subtly injures all that it touches; and it touches everything. It can sink to the utmost vileness which the human race can conceive. At its greatest it can find no higher symbolism than that embodied within itself, to sing how

In the Beginning was the Word, and the Word was with God, and the Word was God.

In dealing with such a subject, terminology needs the greatest care. The fashion of the day turns to the perpetual coining of new terms in pseudo-scientific research, often superfluous even in the case of those exploring new and strange paths of knowledge. In writing about speech we ought not to be so illogical; it should be possible to obey the firm rule which makes French scientific works twice as easy to read as those in any other language:

Tout ce qui n'est pas clair, n'est pas Français.

In this great field of speech, what elements are distinctly subject to rhythmic control?

First, obviously, utterance. The elements of time and force are plainly perceptible in every sentence we hear spoken; all the distinctions of vocal and consonantal sounds are produced by variations in the spatial movement of throat, tongue, jaw, and lips. In Chapter VII it will be made clear that spatial adjustments lie behind the maintenance of musical pitch. Even more clearly they create the resonances of vowel quality. The same thing is true of laryngeal actions in song, but here it must be remembered that our consciousness takes no count of action below a certain point of automatonism. When we swallow a mouthful of food, we are absolutely conscious of our actions, while we are chewing it, and the tip of our tongue can detect the finest bone in a mouthful of fish. This consciousness continues as far as the first movements of swallowing, and then, although the process is continued to complete assimilation, we are not conscious of it at all. So, in the opposed action of song, we are easily made conscious of the movements of the lips and of the tongue tip; we have no consciousness at

all of the use of the vocal cords unless we are straining in the production of tone, and we direct the pitch associations of speech quite subconsciously through the ear. Few speakers ever know whether their cadence is moving up or down in the scale; while it is necessary deliberately to train their ear consciousness, the only need we have of laryngeal consciousness is to know that we must avoid it in speech or in song.

How do the elements of force, of time, and of space combine in ordinary speech? Going back to the earlier definition of rhythm, we may say that speech requires for its production:

A definite measure of respiratory force.

A temporal control of expiration.

Accurate timing in phonation.

Exact production of the vocal note under direction of the ear.

The correct shaping of the vowels in the resonator scale.

The precise articulatory formation of all consonantal sounds by tongue and lips.

When these are all unconsciously carried out in the performance of our function of speech, utterance is still not rhythmic unless it correctly translates the mental content to be expressed, in a vocabulary which correctly follows linguistic sequence.

The practice of this rhythmic utterance must become so automatic that our mental consciousness is concerned altogether with what we want to say during the time that we are saying it. Of what nature, then, is the automatic memory of speech? Can we suppose that somewhere there are stored up individual mind pictures of every word in our vocabulary, and some controlling image of the way in which words have to be arranged to convey a particular meaning? Such a ludicrous conception of brain action is long discredited. We know that our previous

knowledge of what is being said has a very curious effect on our power of hearing. We go into a church where a service is being held, and we hear not a word. Presently some gesture or touch of ritual gives us a clue to the point the service has reached, and from there on we "hear" quite clearly everything that is said, except the notices given out; here, we have no antecedent knowledge to help us. How is it possible that knowledge of what is being said can supply us with hearing?

In his *Matière et Mémoire*, Henri Bergson has given the accepted explanation:

I listen to two people speaking in a language which is unknown to me. Do I therefore hear them talk? The vibrations which reach my ears are the same as those which strike theirs. Yet I perceive only a confused noise, in which all sounds are alike. I distinguish nothing, and could not repeat anything. In this same sonorous mass, however, the two interlocutors distinguish consonants, vowels, and syllables which are not at all alike, in short, separate words. Between them and me where is the difference?

The question is, how can the knowledge of language, which is only memory, modify the material content of a present perception, and cause some listeners actually to hear what others, in the same physical conditions, do not hear.

The difficulty would be insuperable if we really had only auditory impressions on the one hand, and auditory memories on the other. Not so, however, if auditory impressions organize nascent movements, capable of scanning the phrase which is heard and of emphasizing its main articulations. These automatic movements of internal accompaniment, at first undecided or uncoordinated, might become more precise by repetition; they would end by sketching a simplified figure in which the listener would find, in their main lines and principal directions, the very movements of the speaker. Thus would unfold itself in consciousness, under the form of nascent muscular sensations, the motor diagram, as it were, of the speech we hear. To adapt our hearing to a new language would then consist, at the outset, neither in modifying

the crude sound nor in supplementing the sounds with memories; it would be to co-ordinate the motor tendencies of the muscular apparatus of the voice to the impressions of the ear; it would be to perfect the motor accompaniment.¹

Are we not here presented with an unusually complex example of kinaesthetic memory? The phrases of conventional greeting, such as "Good Morning," come out as a whole from our consciousness, without the slightest sense of what we are saying. It is just an amiable gesture. Perhaps the funniest example of this is our use of the term "How do you do?" We say it without the definite reference to its meaning, but we convey an enormous meaning by the inflexion in which we deliver it. If we really want to know how our friend does, we follow it immediately with a further question, "How *are* you?" In ordinary colloquial speech, we have no mental image of individual sounds whatever, not much of individual words, and we are sometimes astonished to realize what we have actually said. We have all met with people in a rather primitive state of mental development who will innocently echo the last two or three words of every sentence spoken to them, and perhaps we have maliciously tried to catch them on the old trick of the "don" lock and the "don" key. These sufferers from "echolalia" obviously have a hiatus between their utterance and any form of thought.

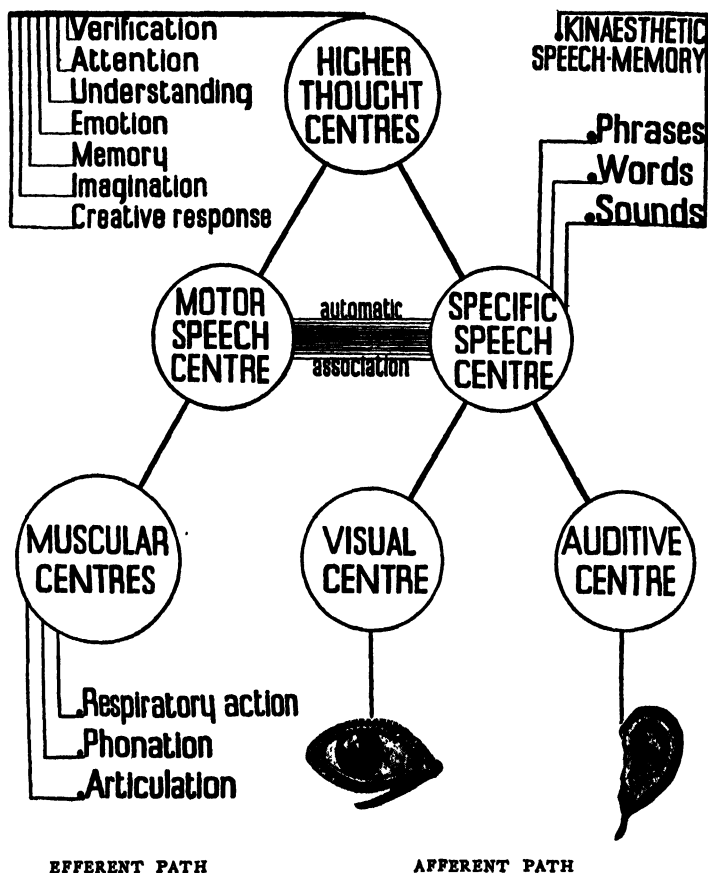
There is hardly more link between our babbling repetition of conventional phrases in formal intercourse.

What mental process underlies this queer detachment in speech? The following diagram may serve to illustrate it.

Its meaning is subject to very strict limitations. Most

¹ Henri Bergson: *Matière et Mémoire*, p. 113. English translation, *Matter and Memory*, by Nancy Margaret Paul and W. Scott Palmer (George Allen & Unwin Ltd.).

emphatically, it has no relation whatever to any attempt to tabulate "brain centres" and make them responsible for various stages of utterance. Such a tabulation may



be attempted by a specialist in the physiology of the brain but even with great scientific knowledge behind it, it might gain little acceptance to-day from the general body of physiological thought. This diagram represents the order in which we meet with difficulties and interruptions in normal speech. For instance, it is perfectly

clear that people who are blind cannot receive visual impressions from a printed book. There is no idea of suggesting the cause of their blindness, but only the fact that the destruction of sight makes it impossible for them to read except through touch. In the same manner the small proportion of people who are completely and absolutely without hearing cannot learn to speak through the ear; we have to use the channel of sight, very carefully and wonderfully assisted by the channel of touch, to enable them to acquire spoken utterance. We should therefore be justified in drawing a diagram of speech, in which we placed one circle to indicate the understanding of speech and two others joined to it to indicate visual and auditory perception.

But there are many other forms of speech defect, due to blocks on the path of a speech impulse; and we need only consider a moment to realize that the path itself is a dual one, inward and outward—the technical terms are afferent and efferent; we are sitting quietly looking out of the window, when a strange and very beautiful bird alights on the lawn outside. The message of its form and colour travels in to our consciousness; immediately an outward message changes our whole physical stance; we lean forward, we open our eyes more widely, possibly we smile, all the muscles of our face assume the expression which we associate with eagerness, and at the same instant that we do all this we say, "Oh, look at that bird," in the cadence we associate with emotional excitement. A message has gone in, and a message has come out. This diagram then indicates only the stations on the path of the "speech line," and suggests nothing whatever of the multitudinous speculations as to their exact position, form, or even their physiological existence.

Following the afferent path, we receive an external impression from the eye or the ear; we see or we hear;

but that does not mean that we look or listen. That is a matter for a deeper level of consciousness which we *do* call the Visual or the Auditory Centre in the brain. Now we are conscious that what we see or hear need not necessarily make us speak at all. It might cause us—like the lady in *Sir Charles Grandison*—to

rise and walk silently from the room with a swimming gait, my complexion much heightened.

If speech is to be the result, the afferent impulse must travel to some point which awakens the memory of speech; this we call the "Specific Speech Centre." But the result of our visual impression may call only for a cry of joy or horror; for one single word, an exclamatory "Well!" which, as we say, "suggests a world of meaning." On the other hand, it may call up one of those phrases which we serve out unconsciously, such as, "Did you miss the train?" sympathetically or reprehendingly uttered as the case may be. But, before we can select the right card to play, some logical impression will probably have formed in our mind. We must have verified that there is something to see or to hear. We must have understood or recognized what we have seen, with a quick emotion which gathers up some memory and results in a picture of our friend's usual unpunctuality, and so determines the nature of our sentence. On the right-hand side of the diagram, sounds, words, and phrases are linked as belonging to our kinaesthetic memory of movement, as Bergson understood it. The other series are merely classed as belonging to the higher thought centres, whether these are to be classified as mental or reflex. The inward journey of our speech impulse is over, but if we are to do anything about it, we must pass to action:

But one word with one of us? Couple it with something; make it a word and a blow,

cries Mercutio. The two things are essentially gestures, and therefore it is an action we have to perform, along the efferent or motor path, and at this point we mark a "Speech motor centre." Now we become conscious that the transition from afferent to efferent is not always accompanied by thought; if we are reading aloud a book which does not interest us, say a very familiar story-book to a child, we can go on reading aloud for several moments without taking in a word that we are saying. We have shut off our thought altogether from our action, and are speaking through an "association" between the speech centre and the speech motor centre. Physiologically these may be identical, the messages may even possibly pass out or in on the same telephone line; but for our purpose they are diagrammatically different. From that motor centre a message must be telegraphed by the neuro-muscular system, and this general motor impulse must control in turn breathing, phonation, and the complicated series of articulations which make up utterance.

This is the significance of the diagram; its practical utility is that in the study of speech defects we may find "a block on the line" indicated at every point and any point of the speech impulse. It is therefore plain that the first necessity from the point of view of Rhythm is a balance between the inward and outward flow of impressions; and this is what we acquire in childhood when we learn to speak fluently.

But our manner of learning is peculiar. It consists entirely of mimicry, once the first idea of significance in words has been gained. Theoretically, a child with no organic difficulties, surrounded by people who speak beautifully, would become a perfect speaker. Practically, even this is not quite certain. We do not always follow the paths of virtue when they are put before us; but in

practice the child has so great a variety of models that it is difficult to achieve a stable standard, and here we come at once to the question, is such a standard possible? Is there really a good and a bad way of speaking? Is it all just a matter of opinion and custom? In regard to one part of speech, the answer is emphatically in favour of a definite standard. The study of the science of vocal sound which governs the production of vocal tone and the fundamental principles underlying the production of speech sounds is not a matter of opinion. It is scientifically based on natural and physiological law; on the study of the nature of sound, and on the study of the nature of physiological movement.

Phonology is the science of vocal sound. It is based upon the physical laws involved in the production of sound, and upon the physiological laws which govern the functions and actions of the living organs of the voice. The study is only specialized in regard to the human voice because we have to study the sounds of language and of music with special reference to the speech organs particularly involved.¹

It is most unfortunate that the term Phonology should have been diverted from its proper significance by a certain group of phoneticians to express a special theory in regard to phonetic classification.

Casual opinions as to the pleasantness or unpleasantness, naturalness or affectation of certain forms or vocal sound, only approach the question from without. Speech must therefore be considered first from the point of view of the rhythmic modification required in the use of our phonological apparatus for the production of voice.

The difficulty we have to face here is that in the organs involved, the respiratory mechanism, the larynx,

¹ W. A. Aikin, M.D., *op. cit.*

the muscles of the throat, tongue, and lips, the production of articulate sounds is a secondary and acquired faculty.

The rhythmic action of the chest in ordinary respiration is connected with the problems of circulation. The fundamental physiological function of the larynx and tongue is connected with swallowing, and with the closure of the larynx to prevent food from entering the air passage.¹ What actually has to take place is a modification in the rhythm of respiration, substituting a light, rapid inspiration and a slow, controlled expiration for the equal normal rhythm. And this must be done without any disturbance to the normal action of the muscles concerned; briefly, without forcible inspiration or rigid expiration.

This is not a text-book of method, but from the rhythmic point of view the problem is solved by practice which develops lightness and flexibility in the chest muscles, and steadiness of control in the abdominal muscles, producing not a monotonous repetition of breathing at regular intervals, but a capacity to breathe silently and without effort, at short or long intervals, as the phrasing of speech may require, always without injurious effect on the resultant vocal tone.

In regard to the larynx, some nervous contraction often persists during the effort of phonation, and destroys the natural rhythm of attack; for instance, a widening of the lips and a raising of the tongue will automatically produce a contraction of throat muscles, as if for the effort of swallowing; influencing the quality of vocal tone most unfavourably; the exact timing of expiration and phonation, the limitation of the expiratory power of the breath to the exact force

¹ See the whole history of the evolution of the Larynx in Dr. Negus's work, *op. cit.*

required to set up the vibration of the cords, all guided in the case of singing by the highly-cultivated sound perception of the ear—these are the rhythmic foundation of phonation.

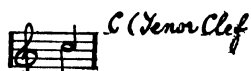
Considered as an instrument, the voice therefore consists of the usual three parts of a wind-instrument: bellows, to supply the force of the air, a vibrator which produces sound vibrations and is the source of the note, and a resonance chamber or resonator, one section of which modifies the sound and gives it particular qualities.

It is strange and unfortunate that the comparatively simple principles involved should have been subject to such disputes and should have raised up schools so violently antagonistic. Yet it can be understood. In order that the principles of phonology might be clearly laid down, it was essential to obtain perfect co-operation between those who understood the physical nature of sound, those who understood the physiological nature of muscular action, and those who understood, appreciated, and practised the beauty of vocal tone as an art.

It was a fortunate accident that united all three qualifications in the person of Dr. W. A. Aikin, whose simple scientific studies on the Voice leave little room for further mystification; where his work has been challenged it is generally by those who have approached it from one point of view alone, and are ignorant of the nature of its practical application; but it is perhaps only those who had the privilege of working for many years under his inspiring direction, and have learnt something of the scrupulous accuracy which underlies all his teaching, who can fully appreciate the debt which vocal science owes to him. It is to be hoped that the practical application of his knowledge and exquisite artistic sensitiveness is in the hands of a sufficient number of loyal and qualified students to ensure its unbroken

transmission in the art of English singing and speech; it is in regard to the nature of vowel sound that some of his most valuable work has been done; making a practical application of the whispered resonation of vowel sound, he has formulated a clear and adequate resonator scale following the principles of Helmholtz, but with certain important modifications.

From the point of view of physiological action, it is essential that the movement of the jaw should be loose and balanced by the reciprocal innervation of the muscles concerned. This means, as a rule, that it should rest so as to leave an opening about three-quarters of an inch between the upper and lower teeth, without any conscious tension of the antagonistic muscles. At the same time, the mouth shape needs to be uncontracted so that the corners are almost effaced, and the upper and lower teeth can normally just be seen. It is the position often found in a Greek mask and in a singer's well-shaped "AH." If a whispered expiration is made in this position, the result will have a definite pitch. Musically, in the average man's voice it would be noted as



If the lips are drawn a little inward in a rounder shape, the sounds AW, o, OH, oo, OO,¹ will consecutively follow each on a downward scale to



During this time the jaw remains in its original position so that the resonator is never diminished in size, and

¹ Fop, Fall, Foe, Foot, Fool.

there is no occasion for the tongue, lying just below the lower front teeth, to make any movement at all. The control of the vowel quality is left entirely to the ear in its mental sound perception.

Returning now to the "AH" sound, the scale progresses from "AH" to "EE." by the gradual arching of the tongue, without any disturbance of the relation between the tongue tip and the lower front teeth, or any disturbance in the position of the open jaw.



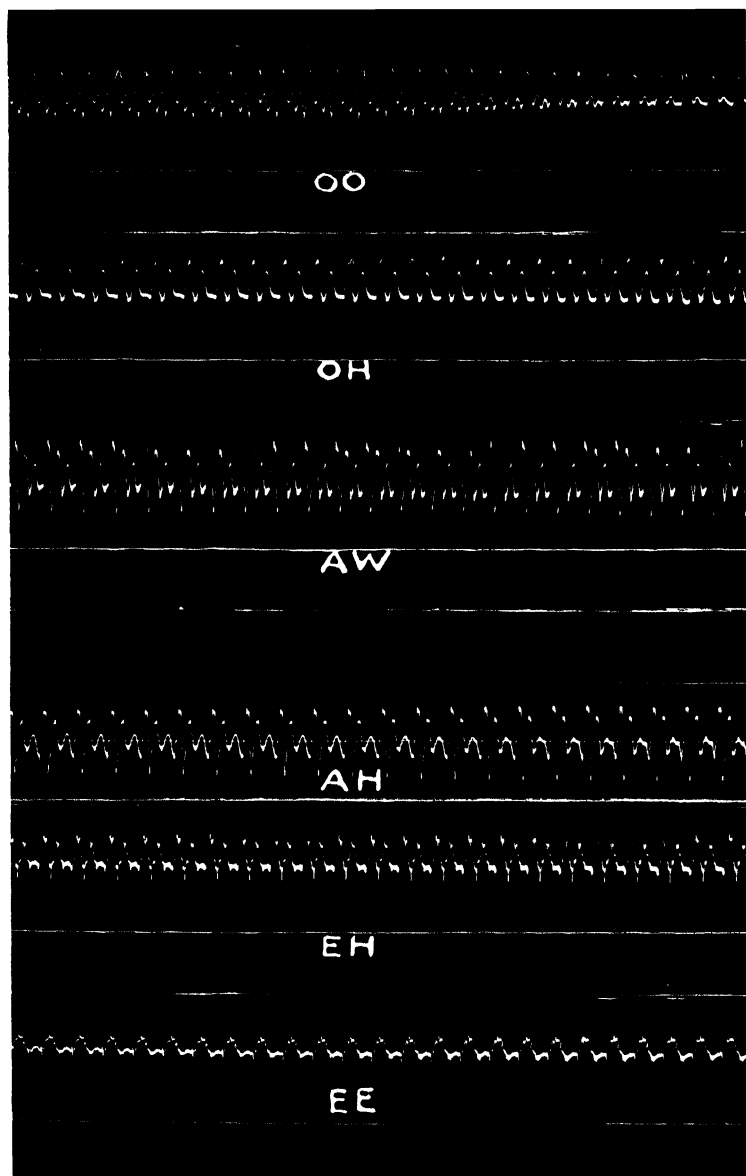
MAIN VOWEL SCALE

The six diagrams placed opposite are phonograms¹ of the vowel sounds.

They clearly illustrate the rhythmic character of vowel vibration.

This resonator scale establishes the rhythmic order of the vowel resonations, and though they glide away from it in joining the consonants during rapid speech, it is never necessary to treat these glides as if they were diphthongs, that is to say, separate positions, often passing from a lax to a firmer position, as in the combination "OW" in "Now," or "I" in "Time." It is, of course, clear that the position of these vowels in song is more stable than when they recur in the sound-groups of words. Therefore the whispered practice should pass into the song practice and that into the word, in order to obtain

¹ The production of these oscillograph phonograms, to which he gave an infinity of time and trouble, was almost the last work carried out by the late Mr. J. F. Heard, whose death only a few weeks later was so tragic a loss to English research.



PHONOGRAM OF OSCILLOGRAPH RECORD SHOWING THE SIX MAIN VOWELS OF THE RESONATOR SCALE. RECORDED BY THE NATIONAL PHYSICAL LABORATORY RADIO RESEARCH STATION, SLOUGH, JUNE 1935. SPOKEN BY THE AUTHOR

this sense of the rhythmic order of sound vibration, and to imprint it kinaesthetically on the memory.

Such practice sets us free from the necessity for the irritating type of correction which amounts merely to the demand, "Stop talking your way, and talk my way." Being constructed on the principles of vocal sound, and in accordance with its natural properties in resonance, it is equally helpful to every form of dialectical or individual mispronunciation.

The question of the sound to be selected in a particular word, whether, for instance, "Either" or "Eether" is correct, can be determined by counting heads. We do not want to be peculiar in utterance, or people will watch our utterance instead of listening to what we say, but the question of permitting an actual faulty intonation, resonating out of tune, such as is constantly heard in the speech of small Cockney children, when they approximately nasalize the same word as

Ōifi

is another matter. That is not a question for the phonetician, but for the phonologist, since it is primarily a question of the rhythmic nature of resonance.

It is easier, perhaps, for the ordinary speaker to realize the importance of rhythm in syllabification and the articulation of consonants. Here three factors, all of them rhythmic in character, come into play.

First, the need for the correct spatial articulation of the sound intended by the speaker; there is nothing unpleasant in the sound of "v," only it does not happen to be the middle sound of the word "Father," and the error is a purely spatial one. The tongue does not come forward between the lips, and they close too tightly and substitute "v" for "th."

Secondly, the need for the isochronous succession of

stressed syllables and the clear time-spacing of the intervening syllables, without which speech becomes cluttered and genuinely difficult to hear in its proper order and succession.

Third, the linking of force stress, duration, and pitch with significance in every spoken sentence.

These three elements give us our means of stressing words and phrases. Stress more often applies to disyllabic words, duration to monosyllables, and pitch to the phrasing stress of a sentence. A word like "incomprehensibility" has three stresses; on the prefix "*in*," on the syllable "*bi*," and a light stress on the syllable "*hen*"; the last is more marked in duration than in force. Out of this variety in stress the principles of English metre have evolved themselves (see Chapter VIII).

Any difficult sentence can be easily spoken if its syllables are:

(a) lightly and clearly stressed on the logically dominant syllables;

(b) articulated with sufficient isochronous division in time;

(c) cadenced by a sufficient pitch variety to bring out the meaning of the sentence above that of the words.

The accompaniment of hand-clapping movements in such exercises is valuable. It appeals to a more profound racial sense and to a stronger kinetic feeling of movement. Even a "Heldentenor" Siegfried has been known to forge more rhythmically than he sings.

Any correction which insists on reiterated unrhythmical practice runs the risk of serious injury to speech. Among the many causes which provoke the miserable condition of stammering, none is more frequent than that of the conscientious parent who, at the first symptom of a natural childish hesitation, commences a course of "Say it again, dear, say it again," which suddenly fixes

the child's attention on the impossibility of uttering some particular sound.

If any evidence were needed of the fact that good speech is rhythmical, it might be found in this nervous defect of stammering. Every part of the speech mechanism is unrhythmic; in advanced cases there is often the appearance of an actual spasm in the diaphragm muscles, when attempt is being made to vocalize with a tightly closed larynx.

The quality of syllabification is completely destroyed, and the power of releasing initial consonants to form the following vocal vowel is so disorganized that the consonantal sound may be repeated a dozen times while the stammerer is convinced that he cannot say "s," or whatever the initial letter may be.

The symptom of stammering is, as Dr. Wyllie¹ originally pointed out, delayed phonation, but it is in no sense a speech defect; no single speech exercise, no form of speech articulatory practice is of any service to the stammerer, except occasionally as a means of suggestion; the disorder is purely nervous, a reflection of certain psychological maladjustments directed into this particular path, by what looks like pure accident, but more often indicates some general hereditary feebleness of speech rhythm in the family, or a moment when the accident of an intense fear coincided with some special speech criticism, or a series of failures in speech. Song and rhythmic games and jingles may act as preventatives. The principle of therapeutic relaxation, to restore rhythmic action, was first discussed at the London Speech Conference in January 1912. Dr. Crichton Miller and Dr. Campbell McClure then outlined the case for the psychological treatment of the disorder. The practical use of relaxation was fully tested by the

¹ J. Wyllie: *The Disorders of Speech*. ¹

group of workers at St. Thomas's Hospital Speech Clinic, founded in 1912. In 1927 Dr. Millais Culpin gave a fuller analysis of the neurotic origin of stammering, and Dr. Boome and Miss Ann Richardson outlined the whole use of relaxation which they have since embodied in a most able monograph.¹ But what we still need to achieve is the prevention of the disorder by adequate speech release in childhood, or its early cure when the first symptoms present themselves.

The utility of the wonderful organization of phonetic linguistics is unquestioned. It has revolutionized the whole conception of international speech teaching, and in articulatory defects the work done is admirable. The phoneticians' understanding of aesthetics in speech is extremely limited, and their rather academic attitude towards any fundamental phonological standard of speech has on the whole tended to lower, rather than to raise, the scholastic standard of utterance. But where the pronunciation of disputed words is in question their sane and unemotional attitude is the only possible one. To regard a variation between "päss" and "päss" as a moral delinquency was so absurd that the merely social or "shibboleth" standard of pronunciation was almost worse than a complete absence of standard.

Every language that is spoken presents certain peculiarities difficult to reconcile with the principles of phonology and of rhythmic articulation. Where the resulting errors are accepted as "standard," the four aesthetic uses of speech rapidly decline, and there is a tendency to national isolation in speech, and a contempt for the speech of other countries. We have an instance of this in the exaggerated English diphthongs and German gutturals.

Several of the great variants on the American continent

¹ Boome and Richardson: *Nature and Treatment of Stammering*.

and in the self-governing dominions illustrate such distinctions; ordinary variations in pronunciation are either negligible, because they are matters of taste, like the American "Birkley" instead of the English "Barkeley;" or, like the everted R in "morn," "corn," or its ellision into "moyn," "coyn,"—they are the results of mongrel types of speech, and are physiologically inadmissible, interfering with vocal quality. It is interesting to hear the negro spiritual singers suppress their r's altogether to avoid these faults in their soft beautiful voices.

It would be as sensible to call a cold in the head a dialect as to give that name to the language of the

Bahl id raahd,¹

the complete lack of correspondence between the ear and the articulatory muscles, and the lack of any stable rhythmic formation of kinaesthetic memory combine to produce these monstrosities.

The method of cure is not impertinent criticism or long series of exhausting exercises, but a restoration of the muscles to their proper rhythmic combination of force, time, and space.

In the more narrowly accepted meaning of Rhythm, it is important to conserve clearly the proportionate stress and scansion of individual words which have to be used in our great heritage of English prose and verse, and in song. We want no distinction between the speech form used in these three rhythmic expressions.

The strength of our monosyllabic words is remarkable. Such essential instances as—

Love	Death	Fate	Chance
Hope	Light	Day	Night
Faith	Black	Red	Pale
Rest	Peace	Earth	Sky

¹ "Mile end road."

permit of great freedom in our metric structure, and perhaps explain our love of categories.

With Truth, and Peace, and Love shall ever shine."

MILTON.

Thou'rt slave to fate, chance, kings, and desperate men.

DONNE.

Silent, bare,

Ships, towers, domes, theatres, and temples lie.

WORDSWORTH.

Attempt these with the unstable vowel resonation of nasalized "foite," "charnse," "dī," "treuf," and realize how they have lost every possible metric quality; "melank'ly" will never fill out the measure of Shelley's Ode, or the nightingales'

most musical, most melancholy.

Our fine lists of trochees syncopate our ultra-iambic metre. For example:

Glorious	Music	Beauty	Splendour
Royal	Sapphire	Golden	Wisdom
Vital	Glowing	Famous	Virtue
Danger	Mother	Vigour	Worship
Primrose	Heaven	April	Rapture

The list is selected almost at random from a book of verse. The rhythmic figure of the words is a simple succession of stressed and unstressed syllables with no fixed tonic accent, and without much regard for quantity,—that is, for the duration of vowels or syllables. Read with the syllabic equality of French stress, or with Welsh detachment, or Irish incantation, they would present a totally different pattern with a definite loss of the rhythmic significance we attach to them.

Only the neatest articulation can compress "Un-

premeditated" into the scheme of English verse.¹ This makes it plain that used as material for verse patterns, words give a supreme example of the distinction between Rhythm and mere pattern.² It lies in the contrast between formal metric syllabic pattern and the pulse beat of Rhythm, maintaining the verbal unity of words against the metric beat. Rhythmic pulse beat always includes the value of measured pause, equivalent to musical rest. Reference to the rhythmic association between sound and sense, and its influence on prose and verse structure, is reserved for consideration in Chapter VIII.

It is no wonder that metric scansion so frequently destroys Rhythm when non-rhythmic speakers attempt to understand verse, and dismiss it as meaningless sing-song. Not long ago a very intelligent young Englishman explained how much he preferred to hear Shakespeare in German, because there was none of the "silly jiggling verse."

Where the custom of speaking rhythmic verse has continued as it has on the Scottish Border, we get the perfection of rhythmic delivery.

But we have a yet greater reproach in our average reading of the greatest prose ever written, the Authorized Version of the Bible, where the isochronous periodicity depends wholly on clear, firm shades of significance, and the avoidance of senseless pronominal, prepositional, and even adverbial stresses. Much of the complaint against modern free verse is due to our preference for metric over rhythmic stress.

We find it necessary to practice speech at every kind

¹ See Chapter VIII.

² A similar distinction is clear in the contrast between time and Rhythm in music, i.e. $\frac{3}{4}$ time and the Rhythm of a waltz, based on the character of the dancer's movements. See Chapter VII.

of level, and fully 70 per cent of our people never achieve any form of audible utterance which conveys their true meaning, or expresses their personality or their emotions, without recourse to slang, technical vocabulary, or bad language.

The failures of speech due to this faulty establishment of a conditioned reflex reflect and emphasize almost the whole history of the speaker's behaviour and mental condition. We have the long series of physical errors, where the speaker accommodates himself to a complete ignoring of his ear, and substitutes "th's" for f's," "v's" for "th's;" we have the neurotic infirmity of the lisp promoted by bad dentition, but on the whole purely of nervous origin; nasalization which places a social barrier more formidable than clothes or manners between the speaker and his fellows; the accidental mannerisms and errors of hero-worship in youth, the blocks on the line of tone-deafness, word-blindness, or delayed baby-talk, the profound shyness resulting from a sense of speech inferiority.

The psychological study of speech is still in its infancy, but the one certain road to improvement is along the line of a heightened rhythmic training of the ear, in listening, in reading, in speaking, and in dramatic expression. At every single point in speech, Rhythm is the unfailing key to success, and in the distinction between metric and rhythmic writing it is the secret of all great verse. In addition to a series of natural kinaesthetic memories by which alone we remember words, we have built up an elaborate reflex action intended for this special purpose alone, which we call Conversation, or being able to speak. Here we find a great difficulty in obtaining anything like facility in expressing a wide range of experience. We are most successful when we bring to our aid a very wide and interesting vocabulary;

but, above all, when we exploit our rhythmic gifts to the uttermost, by the study of Verse with its regular recurrences of pattern, of Prose with its longer and more significant periodicity.

Summing up certain practical conclusions, it is clear that the movements of speech are in their nature rhythmical, co-ordinating force, time, and space. This implies that the principal errors in utterance are due:

1. To errors of timing in co-ordination and in pace.
2. To excess or failure of force as in poor breath control.
3. To errors in spatial adjustment, such as the substitution of labial for tongue action in consonant articulation, vowel resonance, or cadence.¹
4. To failure of synaesthetic order in the successive movements of speech, as in the case of stammering.

If this is realized the correction of faults can be more rapidly carried out with less nerve strain, where the fundamental error in Rhythm behind a whole group of speech faults is removed, rather than by concentration on individual correction of syllables or words.

If we attempt to follow the child's acquisition of speech sounds as we have done in relation to the establishment of other conditioned reflexes, we see this order working itself out before our eyes. First comes mere crowing, babbling, and lalling; the child plays with his vocal organs to develop his kinaesthetic sensitivity. There is constant repetition; there follow long periods of babbling, which the watching parents are quick to interpret into paternal recognition; the whole mechanism of speech gradually comes into play; the tongue tip last, at about the twelfth month of life. Many vowel sounds are present even in the early cries, but not properly stabilized vowels.

¹ The rhythmic error of forced lip widening, for instance, may distort only the vowel "oo," but will influence all tone adversely.

The most usual period for the appearance of the first word is generally the tenth month, and very few delay longer than the fifteenth month. Eighty-seven per cent of the girls and only fifty per cent of the boys had achieved their first distinguishable word by the end of the twelfth month, a difference which is commonly reputed to persist in later life.¹

The development of speech and language follows a natural course; once the idea of significance is grasped, there comes a period of collecting names, as we are later to collect postage stamps or china. The average vocabulary of a child of three and a half already consists of about 1,100 words. This has risen to seven thousand by the age of twelve, but does not progress proportionately in later life. There is a very bad set-back in speech at the period of second dentition, and at that time a stammer may easily be set up. It must never be forgotten that auditive rhythm in speech, musical sound, song, verse-speaking, or reading aloud, is not perceived purely by the mechanism of the ear.

Speech and music are characteristically human functions which cannot develop until cortical pathways make possible very rapid and complex learning.²

This is especially true of the development of the sentence which generally takes place towards the end of the third year. It is plain how the disturbance in the tongue sensation at second dentition upsets the whole rhythm of speech and delays or distorts the motor kinaesthetic sensitivity which was developing. There is no such thing, therefore, as natural speech, but many individuals possess the nervous and sensory balance which makes excellence easy.

¹ See *Speech in Childhood*, Seth & Guthrie.

² P. E. Vernon: "Auditory Perception," *British Journal of Psychology*, year 1935.

During adolescence the anatomical and physiological basis of rhythmic movement and the law of Reciprocal Innervation in utterance¹ are frequently disturbed, and the voice change destroys the whole pitch rhythm of the boy's speech, adding a nervous complex by the uncertainty as to how the tone will come out. It takes time to restore the balance between antagonistic muscles in which relaxation must invariably balance contraction, and in which the synaesthetic transference between mental image and sense impression is completely carried out. The power of reading enormously increases vocabulary, but often sets up the development of a dual standard—aesthetic and logical by direct teaching—secret, defensive, and slangy as a psychological defence against authority. Sometimes there is strong emotional censorship of all freedom of speech before elders, and this is often prolonged as a symptom of self-conscious repression; sometimes there is aesthetic distress at the loss of a good singing voice at puberty. Speech is rarely normal in rhythm again until the nineteenth or twentieth year.

The acquisition of a second language, if it is intelligently taught, always brings a reaction of interest in the mother-tongue, and at all stages aesthetic practice is invaluable, and forms the one vital force in the establishment of a genuinely high speech standard.

Song consists in an extension of the vocal and melodic elements of speech, employed in the formation of more or less rhythmic patterns. *La parole contient le chant autant que la raison.* Verse speaking orders the rhythmic elements of speech into determined patterns, which enhance its significance and its emotional value beyond the capacity of normal speech. . . . Oratory is the elevation of individual communication to a level where it is audible to and influential upon the mass, and where by its appeal to herd instinct

¹ See Chapter IV.

and group psychology, it completely transcends the psychological effects of normal speech. Song demands vocal purity and melodic line: verse, completely rhythmic action in space and force and time; . . . oratory, volume, and a freedom of utterance which enchants the audience while leaving the speaker's mind free to think only of the content of his speech.

Aesthetic standard is a standard of utterance equal to the demands of these four arts, and its basis is unquestionably physiological and rhythmic.¹

Speech, with its co-ordinations transcending all other human activities and involving in great secondary functions the whole respiratory apparatus and the powers of phonation and articulation, is the supreme illustration physiologically of this law of Reciprocal Innervation.²

A classification of speech defects based on the diagram on page 78 may interest those who are dealing in the curative side of the work. These are cases where the errors of speech are not due to environment, but to the child's inability to reach even the level of its environment. Blindness, deafness, and mental deficiency are cases where the defect modifies the whole educational history of the child, and they therefore demand institutional treatment and completely specialized tuition, but the following presents in logical order less serious types of defect:

A. *Afferent Path:*

(1) *Visual.*

Alexia (word blindness).

(2) *Auditory.*

High-Frequency Deafness.

Tone Deafness.

Word Deafness.

¹ Elsie Fogerty: *Proceedings of the Int. Conf. in Speech Therapy*. Budapest, 1934.

² Elsie Fogerty: "Speech Training: A Symposium," *British Journal of Ed. Psychology*, 1934.

(3) *Sensory Aphasia.*

Mental Retardation, general or specific.

Pathological Conditions following on Cerebral Lesions.

(These appear in the first instance along the afferent, or sensory path.)

B. *Efferent Path:*(4) *Motor Aphasia.*

Congenital (Hearing Mutism).

Pathological.

Nervous.

(5) *General Failures in the Mechanism of Articulation.*

Respiratory Failure.

Aphonia: Pathological.

Functional.

Nervous.

Post-operative conditions of the Naso-pharynx.

Paresis.

Deviated Septum or other nasal obstruction.

Cleft Palate.

Hare Lip.

High Arch.

Dental Deformity.

Nervous Abnormality in Articulation (lateral lisp, etc.).

(6) *Specially Psychological and Connected with Behaviour.*

Stammering.

Hysterical Mutism.

Delayed Baby Talk.

Vocal Dysphonia.¹

There is no doubt that the function of public speaking is a growing necessity in modern life. Professor T. H. Pear, in his *Psychology of Effective Speaking*, insists on the change in the psychological rhythm of public speaking. It is no longer holding forth.

¹ Elsie Fogerty: "Speech Training: a Symposium".

Training for constructive discussion is much more important. In such training, the technique necessary to appeal to different types of mind, to expound, suggest, discuss, argue, persuade, will be of first-rate psychological interest.¹

Finally, it is good to remember that Aesthetic Delight in speech, especially in its form of rhythmic pattern, is the best means of restoring vividness, beauty, and coherence to everyday language.

Speech is the material of Poetry, whether expressed in prose or in verse, and of all great Drama. Many points will be left for discussion under these headings.

¹ Professor Pear: "A Symposium," *op. cit.*

CHAPTER VI

RHYTHM IN CRAFTS, GAMES, AND DANCING

THE inclusion of so wide a range of subjects under one heading needs explanation, especially as they comprise the major part of those activities which are universally regarded as "rhythmic." It is for that very reason that they can be dealt with more rapidly. All those expressions of Rhythm which bring about static patterns, things which can be handled, measured, and preserved, are comparatively easy to identify. So are those simple, unstudied rhythms in folk-dance and folk-song in which a short rhythmic pattern is repeated in time till every detail of its form becomes familiar, and we find ourselves humming it or beating it, inattentively because it has sunk so deeply into our own kinaesthetic memory.

In the same manner, those who have pursued any form of household or hand craft have an unconscious knowledge of the significance of Rhythm.

It is inspiring to watch many occupational crafts of a rhythmic character. The swing of the scythe is still unsurpassed in grace; its automatonism is fraught with just a spice of danger to quicken attention. Endurance of fatigue depends on the breadth of spatial movement to give time for the alternate relaxation of arm and trunk muscles in time with the breathing. The problem on which the mind is fixed is the felling of the long swathes of grass, so that they lie in a static pattern of order. The exercise is perfect from the point of view of health, and so rhythmic that it needs no song to keep it steady.

At first we worked stiffly, unready, but soon the monotonous motion possessed us with its insistent rhythm, and the grass bowed

to each sibilant swish and fell in sweet-smelling swathes at our feet. . . . We took rank again and swept steadily on through the hot still hours into the evening shadows, until the sinking sun set a *Gloria* to the psalm of another working day. Only a third of the field lay mown, for we were not skilled labourers to cut our acre a day; I saw it again that night under the moonlight and the starlight, wrapped in a shroud of summer's mist.¹

The creeping of the sickle, the rhythm of the anvil and of the woodcutter's axe, show man using the simplest apparatus in a perfection of motion. He began by willing the result: performed it with effort and fatigue, improved his mechanism, and then gradually learned to employ it easily while he supervised and determined the variety of its purposeful action. No two trees present exactly the same problem in felling, nor is the problem of the felling confined to the action of the axe. The dropping of the tree is the essential question; just as the expert bringing down an enormous factory chimney can drop it harmlessly without touching surrounding buildings and leave it lying on the chosen space in an ordered train of bricks.

All the various folk-rhythms are derived rather from instinctive action than from the mind of Man. They embody and reflect natural rhythms with a certain interchange and augmentation from their reflection, but no more. They are reflected with almost an equal degree of interest and brilliancy from every type of mind, and in every type of community. They are full of "fancy," however, and therefore unrestrained by the sense of fidelity to Nature. Theirs is the rhythm of reflection. But in the great imaginative arts we face a pattern refracted and analysed by the typical genius of the artist, as the facets of the diamond refract the light.² The work of the folk-artists is "material" for genius, and

¹ Michael Fairless: *At the White Gate*.

² See Chapter II, p. 34.

as such great artists are intensely interested in it, as Shakespeare and Milton were interested in the folk-lore of their England. But once a work of genius is accomplished, it has about it a certain intactness of form, like the diamond to which it has been compared. It becomes a thing "bodied forth" by imagination. It can be an inspiration to other artists, but it can never be re-incorporated in the work of a great artist. To attempt it is to plagiarize or to deface the work of genius, as Dryden defaced Shakespeare.

At the best it is to produce "derivative" art.

Transference into another medium may prove the greatness of the original inspiration, as in the illustration of a great poet by a designer. Even that cannot compare with creative interpretation, such as that of Blake. Perhaps only in great translation, where the skeleton of the original thought has been re-clothed in the subtle intellectual rhythm of another speech, can such re-handling be adequate.

Many occupational movements were consciously made into a dance;¹ the girls sowed the fields to a song, and to the duller occupations song gave life. Under the halls of Odysseus' palace an old slave-woman ground the corn and sang, keeping down the irregularity of fatigue as the rower and the sail-setter did with their chanties:

Father Zeus, who rulest over gods and men, loudly hast thou thundered from the starry sky, yet nowhere is there a cloud to be seen; this surely is a portent thou art showing to some mortal. Fulfil now, I pray thee, even to miserable me, the word that I shall speak. May the wooers, on this day, for the last and latest time make their sweet feasting in the halls of Odysseus! They that have loosened my knees with cruel toil to grind their barley meal, may they now sup their last!²

¹ See Ruby Ginner: *The Revived Greek Dance*, Chapter II.

² *The Odyssey of Homer*. Trans. Butcher and Lang.

In tracing the significance of Rhythm in natural law the necessity for mechanical invention became clear,¹ but all man's earlier instruments aimed at extending the swiftness, the force, the spatial certainty of his own movements, and so he developed his rhythmic control and extended its range with every fresh invention. This is not equally true of all mechanical machine-minding. Absorption in the automatonism of movement is psychologically the most mind-shattering thing we know. It is at the back of all occupational neuroses.² Often the rhythm of modern machinery is so fool-proof that no one but a fool can spend his life's work in running it.

Many years ago the story was told of a group of social workers who carried out an investigation into workroom organization and the development of occupational facility in the avoidance of industrial fatigue, the object being primarily increase of output. One lady delegate had been shown how lack of hand control in feeding a delicate machine reduced the output by such and such a fraction per hour, and to what imposing figure on the other side of the dot this error could lead in a month's work. Even the interested glances thrown at the watching delegates had their unfavourable result on the sum of production, and went down on the adverse side of the balance-sheet. At last, in one corner, they noticed an absorbed figure who seemed literally part of his machine. "That," said the conductor, proudly, "is the perfect worker. That man has a perfect mechanical action, his output is higher than that of any man in the room." They gazed in admiring awe, and the lady member expressed a desire to speak with this paragon, whereupon the group were rather hastily shepherded into another room; further enquiries brought out the

¹ See Chapter II.

² See: A Study of Telegraphists' Cramp. Stationery Office.

apologetic explanation that unfortunately the man was definitely mentally defective!

The credibility of the story has always seemed a little doubtful, because the actions of the mentally deficient are notoriously ill-co-ordinated; but it does explain the need of the modern industrial demand, that ordered recreation should as nearly as possible balance occupation in time, where that occupation is monotonous. Here, in another form, we meet the closed circle of mere repetition, where the whole time of the action is employed in the reiteration of a movement without any intellectual result. No hand-craftsman ever "repeats." The smith's steady hammering stroke perpetually changes its dynamic intention. In a great forging, one guiding hand taps with a little hammer to indicate the exact placing of the shattering weight of blows. Watch a blacksmith making a horse-shoe, twisting and turning it with his tongs, beating together the broken pieces of the old shoe, welding it in the fire to the exact best shape and measure for the horse's hoof; then cooling it, marking it for the nail-holes, and after all his labour is over, turning farrier and soothing the nervous animal, who presently stands confidently rubbing a friendly head on the workman's shoulder while the nails are painlessly driven in, without touch to any tender point in the hoof—and the horse is shod. One pictures the great creature clumping away from the forge, after acknowledging a last friendly pat, with something of that happy mood in which we leave the dentist's room, knowing that nothing more will need to be done for the next three months! It is all rhythmic, not metric, close akin to the musical clamour of great bells, which irritates the undistinguishing ear of the Sunday city listener, but implies for the ringers a round of "changes" and variations of rhythm and tempo, bringing to life a musical disorder

in the clangour of the chimes which it takes a lifetime of practice to produce and to appreciate.

There are, of course, numberless mechanical inventions which have set man's spirit free from the need of slavery and made the slave-market an economical absurdity. There are many as thrilling as a war-dance, or the riding to war of Jehu the son of Nimshi. Like the vaulting spring of the javelin thrower or the grace of the drawn bow, they leave no need for compensating corrective exercises, but set the mind of man free once more to contemplate the beauty of the aesthetic result he is creating. This element of aesthetic delight in movement is the key to the whole matter, and it now demands special attention.

At this point it may properly be objected that what is being described is nothing more nor less than the principle of "Co-ordination," the automatic reaction of nerve, muscle, and organic process by which man moves and has his being in the natural "ordering together" of his functions.

The brain provides the motor machinery for all those acts and attitudes which, to an observer, make up the animal behaviour. Inside the animal's form sits the brain; its work broadly to increase the animal's grasp on the world about it, and hardly less the grip of the external world upon the animal. Grown up with the animals it fits the motor mechanism of the animal, much as a key fits its lock. A question the curious ages never failed to ask is, "Who turns the key?" As a manager of muscle, we can glimpse in that respect something of it as a mechanism. The question, who turns the key, to use that simile, is soon answered. The outside world, the dominant partner in the driving of the brain is the outside world in commerce with the animal."¹

Might we not add through its rhythmic forces?

But what "order" is this? An isolated one? An order

¹ Sir Charles Sherrington, Rede Lecture, op. cit.

by which successive extent and energy mutually interact? Certainly; but surely something more. "Co-ordination" is not merely an individual process or an internal activity. It is primarily the means of bringing man's being, his faculties and his powers, into relation with the rhythmic principles of the universe. It is admittedly first a co-ordination for existence, then for adaptation, then for enjoyment, but finally for mastery over himself and over life.

Within his brain man has gained the power of calling up the impression of things seen and unseen by conscious memory; of exerting upon them his faculties of thought, of judgment, and of imagination. He can record his impressions with a vividness which gives the illusion of reality, and transmit them with a seeming annihilation of space and of time, by calling in the aid of rhythmic energy as a means of communication with his fellows. In accomplishing all this, he has become conscious of the "laws" which underlie his successful achievements. Along a hundred different paths he has selected the principle of Rhythm to order his exertions, clarify his intelligence, and compel his imagination to the creation of beauty and of harmony.

It may be altogether beyond the limits of this inquiry even to suggest that through the mental stimulus of such rhythmic beauty and harmony he has achieved at times a vision of absolute truth; at least he has almost universally proclaimed his capacity for comprehending the design of the universe and attaining some perception of the nature of its Architect.

The greater the art the more stringent is the sternness of the selective force; the less the lazy acquiescence in mere "pleasure of doing it." The aesthetic approach may be defined as the satisfaction of the senses by the selection of the impressions presented to them. The

aesthetic approach to life lies close to the ascetic in the stringent character of its selection; it approaches to the hedonistic in its satisfaction in personal happiness. It never approximates to the sensual which blinds and destroys the capacity for selective perception.

The distinction between Craft and Art, between Folk-lore and imaginative creation, is not easy to establish. There are periods when a whole nation seems inspired with an

inenarrable godhead of delight

in beauty and that individual integrity of expression which we call "style."

There are others when art is enslaved by Dogma, by luxury, or by commercial utility.

The division roughly adopted here is at that point where the whole conscious life of the artist becomes absorbed in his creative activities; when the world must pay him the homage of setting him free to create, without requiring from him evidence of the practical utility of his creation. Just as it must do in the case of the great poet, or the great scientific master of research.

Whether we can properly consider the elements of folk-song and dance and of games and folk-rhymes as aesthetic at all may be a question. There can be no question that their movement is one of the clearest expressions of the sense of Rhythm. But the mythology of the Greeks was sensible of a distinction, in the attributes given to Apollo and to Dionysos. Apollo, the Sun God, beside many less happy gifts, was the patron of the Nine Muses, the God of Music, of Purity, of the Destruction of all things base and evil, of Prophecy and the strange runes of the Pythoness, which, to the Greeks, embodied mystic wisdom. To the mocker he was the God of Lies.

The Muses were the inspirers of Painting, of Lyric Verse, of Dancing, of Drama, both Comedy and Tragedy. But the Theatre was the temple of Dionysos; his ritual grew from the vine-dressers' festivals, when he returned to Athens from long travels in other lands. His dancing was the Bacchic dancing, his music its percussion rhythms, all afterwards expressed in the dramatic chorus, since drama is illusion, and round his head "hovered a little world of dreams."

The great German critics have developed this dual inspiration of art elaborately, but to the artist it is plain that there is only one real inspiration, since it is the sunshine of Apollo that ripens the grapes of Dionysos.

It is from the soil that spring the country rhymes, the country dances to the flute, the country folk-songs, and their first origin is surely the occupational lilt; the spinning song, the call to send the kine home, the milking croon, the cradle song, the old wives' song beside the ashes, telling of bygone tales.

The lofty shade advances,
I fetch my flute and play:
Come, lads, and learn the dances
And praise the tune to-day.
To-morrow, more's the pity,
Away we both must hie,
To air the ditty,
And to earth I.¹

Action rhythms are behind all folk-poetry. The lilt of the Skye boat-song or of

H^o r^oh M^oira dhu T^urn thee to m^e

has in it the action of a tugged sea-oar, not the light sweep of sculls in the Eton boat-song. These two

¹ A. E. Housman: *Last Poems*.

examples illustrate the fascinating tendency to artistic revival in complex ages; as when, in later Greece, Theocritus returns to the songs of the goat-herds, Apollo may seek inspiration from the cup of Dionysos.

Folk-rhythm is slightly staccato, it is not self-sufficing; it scans the smoother rhythm of an action. There is a slight obliquity in the thing described, perhaps a slave's fear lest his master should *quite* understand, or a child's playing-out of life in a game. Take the names at random of a dozen English folk-games—elementary dances, many of them:

All the Birds in the Air.
Fox in the Fold.

Cat after Mouse.
Frog Lope,

all animal names Aesop might have rejoiced in. There are courtship and love games, fortress games, funeral games, harvest and trade games, well-worship games—leading back to some old pagan naiad, later to be canonized as a Christian saint—winding-up games, divination games, animal contest games, and frankly dramatic games, like Hide and Seek, Follow my Leader, Oranges and Lemons. Originally every game had both tune and words, but some tunes go wordless, like the lovely name of "The Blue-Eyed Stranger," and many words have lost their tunes. Counting-out rhymes preserve old numbers, and are the most curious example of the power of automatic repeated rhythms to set up and maintain memory. Almost everyone can remember some jingle like:

Onery twoery zikery zann,
Bob tail vinegar tittle Ann tan,
Harum scarum marjorie marum
Get out you little old man.

which has been known to linger unevoked in two memories for fifty years.

Festival rhymes are among the most charming and illustrate the coordinating power of Rhythm over large groups of words, for example:

The first day of Christmas,
My true love sent to me, &c.

Lady Gomme's marvellous collection of all the traditional games of England,¹ Scotland, and Ireland lies waiting for those who want to know what mysteries underlie "Little dog I call you," or "Minister's cat." She gives one which shows the rude origin of the folk-play in a dramatic rhyme telling the whole story of a witch who takes away one child after another from the house, getting power over it by wheedling a light for her pipe, or a tinder-box. Faint and distant germ of Yeats's lovely *Land of Heart's Desire*.

The main stream of rhythmic handicraft runs parallel with folk-rhymes, and everywhere inspires it, as we see in the early myths and in the *Works and Days*.²

In the early days of man's organized community life he first needed a place to dwell in, and passed from cave to raft, and from earth burrow to hut. There he needed something to keep things in, and we begin the history of the pot.

Wherever any form of human life has existed, we find the fragments of his eating vessels; unexpectedly lovely, at a very early period in Cretan or Sumerian history, and very soon implying the use of the potter's wheel; the turning circle against which the lump of clay is pressed to gain symmetry; the one tool which man, at least to judge by his results, has never bettered. A rhythmic force to form a symmetric creation.

Facing page 112 is a design showing a slender Ming vase, of Kiang-nan Ting ware, which might be

¹ Alice Bertha Gomme: *The Traditional Games of England*.

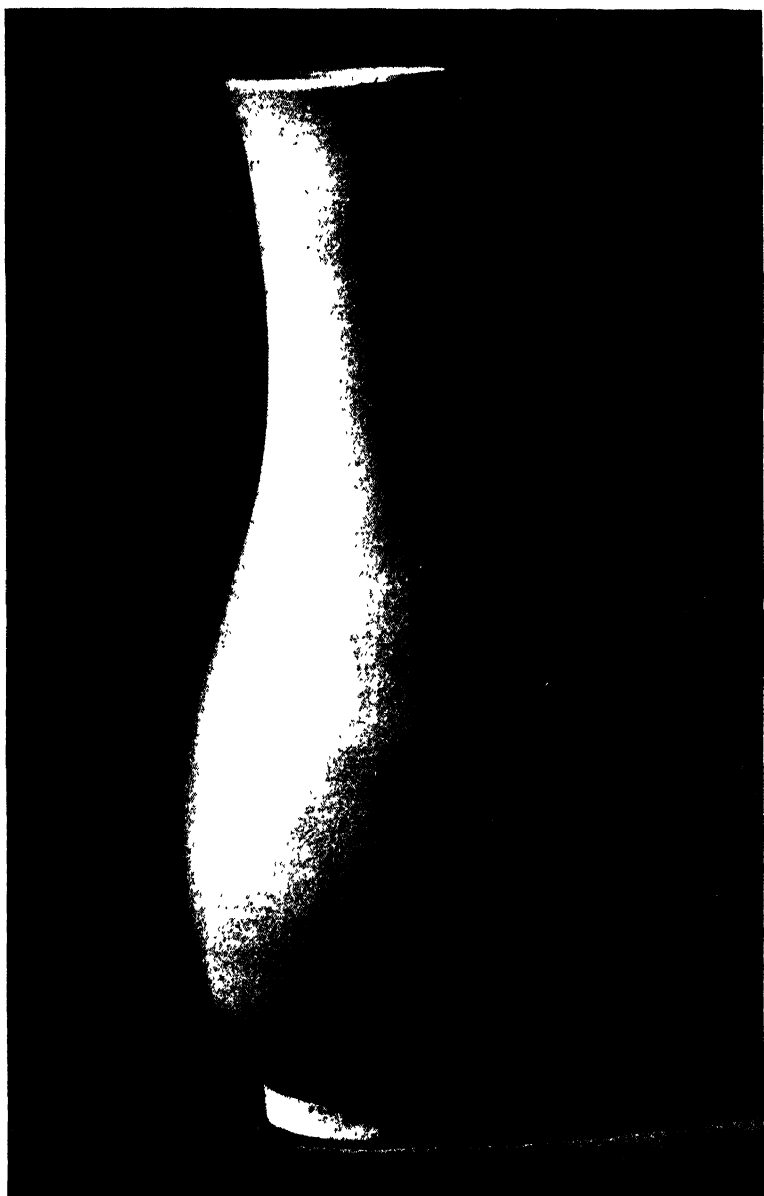
² Hesiod.

chosen as the perfect illustration of symmetry; as the static result of rhythmic action. One senses the fingers that wrought it in their delicacy and precision, the perfect paste, and the clear run of the wheel. It is absolutely undecorated, but we find an equal beauty in that strange legacy of the figured Greek vase. While the Athene "Parthenos" was hacked to bits by the Crusaders for the sake of her gold draperies, after surviving sixteen hundred years, we still look to-day on the prize trophies of the Pan-Athenaic contest, in wine-jars and drinking-cups, from whose dark surface the living memory of all Greek life passes before us. More truly even than the great statuary, these gracious boys with their high-bred horses, their weapons, their cloaks and hats, the grave relaxed gentleness of their pose¹; these girls, with their light fantastic grace, re-create for us the nature of Greek rhythm in life and in physical movement. Some of them are so perfectly drawn that the artist has signed his work, just to show us that he approved of it. The lovely letters float like a little flight of moths down the side of the cup.

In all this work, the material was just clay, experimented upon, refined, sun-dried, baked, glazed in every variety of craftsmanship. Through long ages of history the whole possibility of dating periods depends on the question of the type of ware found in potsherds above and below a certain point; we have looked on the fragments of a drinking-cup, out of which Abraham might have given Isaac drink before they set out on their sacrificial pilgrimage.

There is an interesting mimicry of nature in many of these pots, reminding us of the natural phenomenon of shell growing; one of the almost inextricable rhythmic constructions of natural force and animal secretion. It is impossible ever to get over the sense of astonishment

¹ Vases of the "Classic Period," British Museum, Room II.



A MING VASE OF KIANG TING WARI

By permission of the Royal Academy of Arts, Chinese Exhibition, 1936

at realizing that the pearly towers of the nautilus are grown by the secretion of the spongy little creature inside, or the monstrous hundred pound weight of the gigantic clam, as a result of any action connected with what inhabits it; the polish of the cowrie does not suggest the movement of the soft flaps of flesh which make and preserve it; here we stand on the border between life force, in secretion and crystallization. But their lines and striations have helped to educate man's eye for decorative design, the design which looks back to inanimate nature for a symmetric form suited to fixed decorative positions.

Facing page 122 is another Chinese design showing how such a shape and such a surface has created in the artist's brain a spontaneous conventionality—no longer merely decorative, but quite as far from being realistic—at the age when all Europe was going mad over “Chinoiserie.” It is an egg-shell saucer, and one can believe the story that every stroke was ineffaceable, and that the artist paused for certainty before he attempted to achieve it with the rhythmic sureness of his trained touch. The symmetrical adjustment between the sash of the attendant fairy and the dainty feet of the deer, the climactic effect of the whole design, illustrate in perfection the link between decorative and plastic design. The sense of movement gained by the harmonious sweep of all the lines tells us in a tiny epitome what it was that Leonardo da Vinci sought in his silver points and his red and black chalk drawings with their endless studies of wave motion and wind motion, the swirling lines of the air, and the mathematical problems of the flight of birds, with their “abstractedly interlocked movements of rhythmic form.”

These drawings therefore represent the materialization of the atmosphere. The swirling lines which dominate them are lines of force. We are used to this convention in representations of the sea.

Leonardo has simply extended the convention to the air. He has been enabled to do so by his deep knowledge of the movements of water. But though the drawings have a scientific background, they are fundamentally excuses for the release of Leonardo's sense of form, and for the expression of an overwhelming feeling of horror and tragedy.¹

The great artist never despises craftsmanship.

The second great rhythmic craft of man grows out of the spinning-wheel and the pendulum swing of the weaver's shuttle; Athene, Goddess of Wisdom, is its patroness. Without fur of his own, man made himself coats of skins, and then pulling to pieces some fibrous plant, wove the threads together into a basket, learnt to spin, and at last started on the creation of textiles.

Here again is rhythmic movement isochronous in time, in force, and in space. First the rotary action of the hand, twisting on a thin rod the woollen thread drawn out from a loose tuft of cleaned and combed wool. The sense of continuity and purpose made that craft a symbol of the Fates spinning, passing, and cutting the thread of man's life. Then the swing of the wheel making a more equal and finer thread, and symbolizing too Dame Nature at her play with the lives of men. Then the shuttle flicking through the web of threads, set in a frame, weaving at first a mere set of reticulations in rhythmic succession, and finally by the variation in the spatial order of the threads of the web, through which the woof must pass, designs of such beauty, such complexity, such perfection of texture, that man's aesthetic sense might almost be content to be judged by that one achievement alone. Since the days when a wise Penelope wrought and unwrought threads to keep her faith with her lord there was always a mystery about weaving. The

¹ Kenneth Clark: *Catalogue of the Drawings of Leonardo da Vinci in the Collection of H.M. the King in Windsor Castle.*

whole trade of Tyre hung on the purple drop in a little shellfish, and the babes of the dynasty of the Caesars of Byzantium took their proudest title from the hangings of their birth-chamber, and called themselves Porphyrogenitos. In the palace of the Caliphs of Constantinople a long gallery of figures serve as ghostly mannequins for the robes of some hundred of the descendants of the Prophet, in their habit as they lived. It is difficult to tear oneself away from the glory of the Venetian brocades, gold-woven and jewelled, fresh as the day they were sent as a peace-offering by the republic whose Lion looks to the East. One wonders what precious leaves of yellow parchment, with their delicate Greek characters, brought fragments of classic learning to the Doges in return. What illuminated manuscripts or mosaic caskets helped to carry back Byzantine beauty to Ravenna and keep alive its mosaic art, learnt from the workmen who decorated St. Sophia when the Exarchate was the last outpost of Imperial power in the West? We have lost touch with the life they represent, and we are in a hurry to call them conventional, but

the forms and colours give the keenest delight, the story is only interesting in so far as it had afforded the artist a genuine experience to fertilize his sensibility, for he needs some sufficient motive to set him about the business of creating. His head is packed full of forms and colours awaiting liberation and direction. His inner experience is always in a condition of alert responsiveness to the stimulus of life. His style is his own experience; that is why he imposes his will on natural appearances; the force of his inward conceptions demands assertion over matter of fact. Man's mind is just as interesting as natural phenomena.¹

The mind of man calls on Rhythm to fulfil his intention, the subconscious training of his hand and eye.

Out of the craft of needlework has grown a yet finer

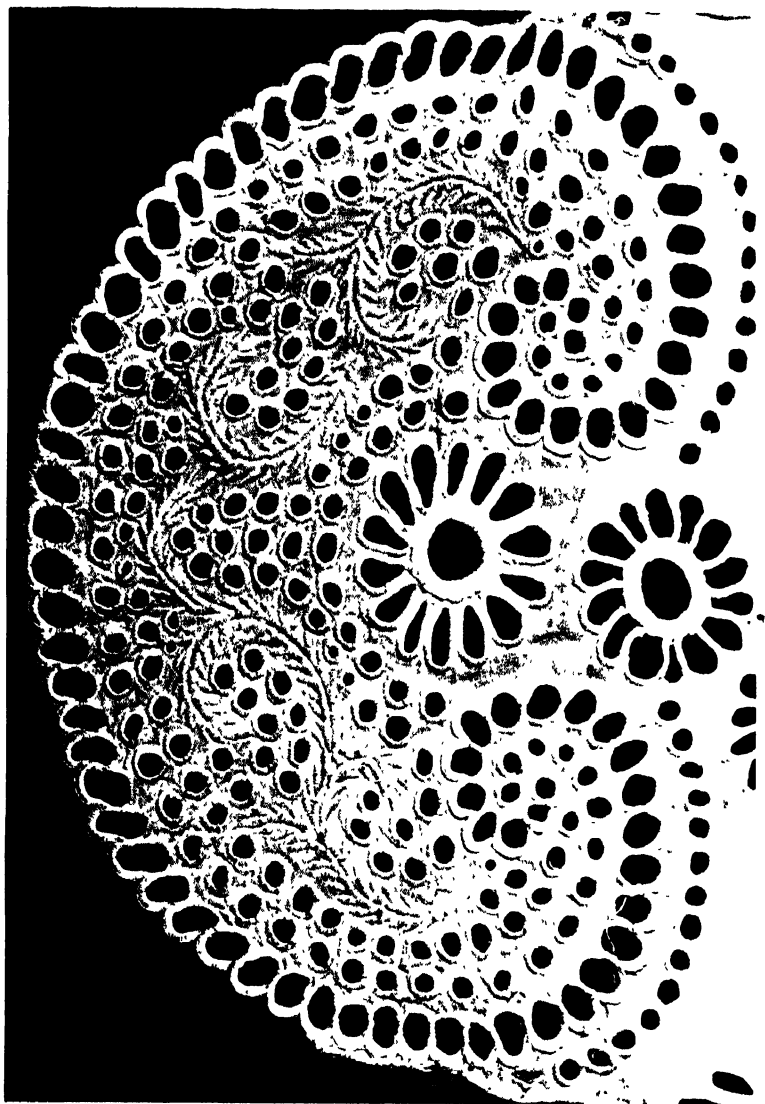
¹ Morris Kestelman: Notes of discussion on these chapters.

pattern making, the wonder of lace. Its beginnings date from the end of the fourteenth century, and it has developed in two different forms, needle-run and pillow lace. It is the fashion to speak as if the whole secret of this lace-making lay in the keenness of sight,

Some woman's eyes went blind for it,

but although this is in a sense true, yet the carrying out of the work depended on the perfection of the rhythmic finger work, particularly in bobbin-lace. The designs are almost geometric in their foundation. In texture the lace depended on the spinning of Flanders linen thread, which was worth more than its weight in gold. There is perhaps nothing that the human hand has made which approaches so nearly to perfection in nature as the fineness of its fundamental "stitches" or "knots," the delicate effect of the line pattern into which these knots are woven, and the effect of the whole outline of the lace when it is finished. We see here again the three elements of rhythmic pattern: the unit of a short series of fixed forms, a longer pattern created out of these, and the assembling of these patterns into some form of metric design which completely harmonizes with the nature of the medium employed.

Like many other of these perfect crafts, lace-making presupposes the existence of a trade group, where the craft is carried on from mother to daughter, or from father to son. It is often suggested that such skill is hereditary, but surely the explanation of this specialized skill lies in the fact that the children are surrounded from childhood with the processes and results of the craft; that they often acquire its motor technique at the age when almost any physical activity can be acquired, faultlessly and without effort, that their mental images and aesthetic standards are unconsciously expressed in



IRISH EMBROIDERY, 1863

terms of that particular craft; a pride in craft is one of the finest social heritages with which an individual can be born. It is a psychological not physiological impression, and where the element of Rhythm is predominant the joy and satisfaction in work outweighs all the fatigues of its labour. Facing this page is a photograph of a piece of Irish embroidery done about eighty years ago as a gift to a young Irish bride for her trousseau by a Limerick lace-maker, whose eyes were no longer good enough to make lace. It has been worn ever since, and the design is unspoiled. It was the old lacemaker's traditional design, and carried out entirely in her spare time, with many apologies for her failing eyes.

Again the story of craft has led us into touch with true art itself; but actually the rhythm of man's body needs no extraneous medium through which to express itself. Freed from its early bondage to mime and to ritual, the dance stepped forth as the one rhythmic art which functions equally in time and in space, and which is expressed in terms of the artist's own body.

So far, in aesthetics the only complete historical surveys of Rhythm have been those made in regard to the dance. They bring out, in the clearest way, a tendency which is present in all art. Only the closest and most prolonged investigation can determine the relationship of cause and effect in the national character of art forms. In crafts, dances, folk-rhymes, music, architecture, and painting this tendency is inevitable.

Greece serves as a supreme example. During a certain period of her existence we have the definite impression that Attic genius experienced a mass inspiration in aesthetics. The sum of its activity was gathered up into religion, poetry, dance, and drama.

What underlying conditions of time, of space, and of energy served to build up this tremendous aesthetic

rhythm we still only partly realize, but for the moment what interests the student of Rhythm is its essentially homogeneous character; the glorification of "The Mean." The worship of Symmetry in structure, the hatred of violence and lawlessness, a temporal sensitiveness which shows itself in the whole character of Greek thought, and is plainly indigenous.

What are the rhythmic elements which determine the character of dance movement?

First, its relation to music; in Greek dancing, and, so far as one can judge, in all early dancing, the music accompanies the dance. That is to say, an isochronous periodicity of "time" rhythm is marked by the music, to which the spatial and temporal movement of the dance conform as a melody conforms to its time signature, in a regular periodicity, but not in metric unison. Later, we have dances to fixed and well-known melodies, in a marked rhythm; very often national dances in which stress is laid on the foot rhythm, and the dance, instead of being stepped or glided, is more or less beaten by the feet. The range of these dances is enormous, and includes the elaborate Russian, Polish, and Spanish national dances. The rhythm may be marked in every kind of rhythmic element; a loud accent, a melodic change, or a prolonged note followed by shorter notes. It is generally marked by strongly contrasted elements of tempo, like the almost frantic *accelerando* of Hungarian music.

This dancing very often assumes a romantic character, one "movement" expressing a defiant, another a passionate, and a third a joyful character; as in Russian and Spanish courtship dances.

Sometimes, as in the generality of Russian dances, there is a general unity in the whole body movement; sometimes, as in Spanish dancing, feet, hands, and body movement, head poise, and the turn of the figure, show

the greatest possible differences, as in the castanet dances of Spain.

Sometimes, the emotional colour of the dance dominates everything, as in the patriotic Hungarian dances and in the melancholy Catalonian Sardana, which is a circle dance to a melancholy air round a central figure. Degenerate dancing, like the Irish Jig, or "tap" dancing, confines movement entirely to the feet, and keeps any trace of expression from the face and limbs, in contrast to the beautiful swing of Scots reels, where the whole body expresses the alternating rhythm of Reel and Strathspey, and the variety of the special steps introduced is very great, yet there is no trace of deliberate dramatization. This dance belongs properly to the sword dance type, and leads on to the type of dancing done in community, to a recurring melody, with a fixed set of steps, but with no restriction of position on the dancing floor. This is a social ritual rather than a dance. Its most perfect example was the valse. Its worst some of the modern crawls, where a whole roomful of people seem to be walking about under the control of a hypnotist, to a rather depressing and melancholy syncopation. It has always included the opposite type, figure dancing, a sublimation of the Court dances of every age, marked by beautiful antiphonal melodies and rhythmic phrases, to which groups or couples move in a rhythmic interpretation of the stately and formal courtships of the day.

These dances were seen among the knights and ladies of troubadour days, and are always remarkable for their display of costume. They also included the peacock-like "Pavane," the Spanish "Corranto," the "Galliard," the "Minuet," the crinolined Quadrilles and Lancers of Victorian days, called "Square" dances to distinguish them from the Valse.

Professional dancing has adopted all these methods

in turn, but has added two variants: acrobatic dancing, which breaks away from music, and consists in displays of violent posturing, springing, and contortion; one of the outgrowths of the *Comedia dell' Arte*—often retaining an element of Mime, i.e. interpretation of dramatic action by gesture in the place of words—and the Ballet;¹ the further consideration of the latter must rank among the greater arts of imagination.

Linked with the whole history of man's mastery over crafts and occupational rhythm is his development of a mastery over many of the forces of nature. One instance will suffice.

Whichever of the many possible theories of Man's first discovery of Fire may be the true one, whether he won it from a volcano, from forest or prairie fire, or from the accidental chafing of two sticks as he wrought a handle for his spear, he must certainly have found the means of kindling as soon as he worked flints for his arrow-heads. The flint was not ousted from practical use till the beginning of the nineteenth century, when matches were invented. Master of the secret of fire, men found in it first Heat, then a defence against the wild, and then Light.

Heat was an easy matter. The stone hearth confined the spatial area of the flame and became the altar of divinity, watched by priests, and, because of the danger and difficulty of rekindling, kept perpetually burning in the house and on the march, a "pillar of cloud by day, and a pillar of fire by night." A beacon signalled danger or victory, an altar of wrought stone flamed to the glory of God; but Light was more difficult and more full of danger. How could it be regulated and tamed to obedience? First, the spatial control: a single brand of wood, hard, and full of pitch, carried as a torch, or, to give

¹ See Chapter X.

longer duration, a lump of fat in the skull of an animal, in a stone cup, or, wonderfully early, in a bronze jar. To make the flame clearer, a twist of dry grass or of fibre formed a wick and regulated the force of the light, and prolonged its duration still further. An iron cresset, torch- or basket-shaped, lighted the days of early Rome through her endless wars; long before, temples and palaces in Egypt and in Greece had created the ritual use of light, exquisite lamps, bronze, or clay, or earthenware, with measured quantities of oil, purified and perfumed, and delicate twists of wool for their wicks, so perfectly controlled that time could be measured by the burning of their flame, and temples and tombs used them to cheer the soul on its last journey to the Underworld; candlesticks, not for oil, but for twisted tallow-covered rushlights, were age-long in their domestic utility; and so led to the costly luxuries of wax moulded candles, the most decorative light ever invented, shining back in innumerable points of flame from the galleries of Versailles with their mirrored walls, refracted from jewels and paillettes on the dress of courtiers and their ladies.

Always there was the search for colour in light, and in the theatre "coloured lights" and flashing chemical powders added to the many risks of fire which ultimately demolished nearly all our old theatre buildings. Then, with the growing love of force came the intensification of power in light, the glowing globes of colza, the reeking vigour of paraffin, till chemistry gave us the flaring fish-tails of Victorian gas, subdued into order and steadiness only just in time to meet the challenge of the fundamental force of electricity, the new unexplained and inexplicable energy, kin to light itself. At first it was a backward step, the blaring blue-white arc, where the checked current sprayed and spluttered between the points of hardened carbon, glaring at white heat. It was a painful dazzle,

but it was new, and did not pollute the air like gas, and so it was endured till a quiet old grey-haired chemist in the North worked out a seemingly insoluble problem, and, imprisoned in a vacuum, the very spirit of light seemed ready to serve us without a quiver of inequality in its rhythmic vibration, turned on and off with a finger touch. To-day we have Light served out to our houses like hot water or central heating, where and as we will. Aesthetically malleable like colour and texture, safe enough for a child's Xmas tree or a dancer's coronet, revolutionizing the whole world of dramatic production, and accomplishing the union of utility and beauty. Force, time, and spatial limitation all blended to achieve rhythmic balance.

The control of water power merged into the power of steam, and to-day the pylons march across the horizon dealing out the invisible power of the current which turns a mangle or ploughs a field.

In all this growth of mechanical force one advantage of rhythmic action is seen: the comparatively small degree of force necessary to accomplish its result. It is possible to set a heavy suspended body in motion by the periodic application of a slight pull. A common laboratory experiment is to use a piece of unspun silk to apply periodic force to a heavy suspended weight; every time the weight passes the mid-point of its swing, from left to right, the slightest tension will steadily increase the amplitude of its swing, while if the thread is pulled at the wrong moment, it instantly snaps. For this reason a company of soldiers crossing a bridge are directed to break step. The rhythmic unity of their movement might synchronize with the natural vibration period of the bridge, and set up a dangerous swing.¹ The principle by which resonance amplifies and enriches the tiny vibration of a reed or a string, and gives its volume and

¹ P. J. Lancelot Smith: *Heat, Light and Sound* (Dent & Sons).



FAIRIS, "FAMILIE ROSL" SAUCER

T'eng Ch'ün period

By kind permission of the Royal Academy of Arts, Chinese Exhibition, 1936

beauty to a violin or a 'cello note, is this amplification of a simple harmonic. So sailors, singing their shanties, increase the actual force of their pull in gaining unity of rhythm to bring up a heavy anchor.

Mechanical progress follows the same line of development in every case. Regulation of force, control of spatial dimension, exactitude of timing; the law of rhythmic action which lies behind the principle of recurrence. It has solved Icarus's riddle almost to the point of safety; we find it difficult to set any limits to its future triumphs, though somewhere in the background of scientific anxiousness, the "second law of thermodynamics" waits like Nemesis of old to shut the gates of progress on mankind.

CHAPTER VII

RHYTHM IN MUSIC

MUSIC is the one art which needs no form or language outside itself to express its inspiration.

If we ask what is the individual inspiration of such an art, we can give but one answer: Creative energy.

Its medium is the audible expression of beauty in sound, through temporal rhythm, in notes of varying pitch and intensity.

These notes are without any separate individual significance, though they acquire associative significance in our minds by the memory of musical composition.

In addition to these three rhythmic essentials of Time, Pitch, and Intensity, notes acquire a varying quality, from the specific resonance of the instruments employed in their production.

The definition of Music as a "*temporal*" rhythm in sound is due to the fact that as music is an auditive and not a visual art, we do not directly associate space with musical form. This point, however, requires the most careful consideration.

The simplest example of musical construction is a scale: a series of notes in rising or falling pitch, graded at first entirely by the ear, differing through many ages and in many countries, but actually embodying mathematical principles of consonance and dissonance in sound. Scales finally resolve themselves into the one major and two minor diatonic scales, to which keyed and stringed instruments are more or less permanently tuned, and in which any instrument in the orchestra must be able to play at least an octave, with the exception of the percussion: drums, cymbals, and triangle, which

are mainly tuned to reinforce rhythmic intensification or stress in sound. The kettle-drum is tuned to an interval of a perfect 5th in the large drum—in the smaller—



In Berlioz's *Messe des Morts* eight pairs of drums and ten players are employed in the "Tuba Mirum" giving rolls with full chords in various positions.

The principle of tuning an instrument is always the same: it consists in so regulating the vibrating element of that instrument that it will give out exactly a larger or a smaller number of vibrations in the second.

The middle note of the diapason normal is obtained by a vibration of 437 to the second, and usually raised in orchestral pitch to 440 a second. All other notes are tuned to produce quicker or slower rates of vibration, when fingered in accordance with the scale in use in that particular instrument, and at that particular period. Wind instruments are particularly remarkable for the production of sustained sound; their pitch quality is obtained by breaking the air pressure against an angular surface which interrupts its vibration, or by causing a reed to vibrate, or simply by the pressure of the tensed lips of the player. The column of air within the pipe can vibrate as a whole, and this is called the fundamental note of the pipe and corresponds to the open string of the violin; or it can be divided into fractions of its own length, which give a series of different notes, or act as harmonics to the fundamental note.¹

The easiest way of acquiring understanding of musical sound is to study the history of these wind instruments, of which the first known example, an Egyptian flute of seven holes—already a very advanced instrument—is dated about 2500 B.C.

¹ D. H. Ferguson: *History of Musical Thought*, Chap. XI, p. 124.

Pipe instruments are also remarkable for their hollow resonations, and the human voice belongs to this series.

The whole history of the development of the orchestra is one of the most fascinating subjects connected with the history of Man. It illustrates his capacity for the invention of instruments which supplement, but at the same time develop, his capacities. There is no question but that instrumental music first gave stability to the performance—and concentration to the perception—of musical sound. The Greeks used the flute in their dramatic performances to assist the voice in reaching dithyrambic energy in great passages, and the emotional response of the artist to the sound gave him an infinitely greater control over the emotions of his audience. Instruments add to the capacities of Man, machines too often atrophy them.

Every instrument, however, must be played by movement; movement of the lips, tongue, and fingers, movement of an excitor—a bow, or a plucking plectrum—by the depression of keys (still with the fingers), which cause hammers to strike and vibrate strings, or pipes to respond to vibration.

All the movement required depends ultimately on the rhythmical capacity and control of a human player obeying the direction of the ear in its finest sensibility to sound. The afferent impression demands a capacity for responding physically and mentally to distinctions too fine for the ordinary listener, and the power of sustaining the attention necessary to stimulate the higher thought centres along this one path; the efferent movement obeys the creation of a habit only to be achieved by the almost unlimited practice which establishes perfect kinaesthetic memory. Probably the greatest example of such memory in existence is that of a great musical executant performing without notes the solo

part of a whole concerto, with faultless fingerwork, unceasingly conserving the sense of the unity of the whole work, not only of his own mental conception of the music, but blending that conception satisfactorily with the interpretation of the orchestra controlled by the conductor.¹

"Body Rhythm and Speech Rhythm"—these are two predominant elements in musical rhythm, and in modern music they are in equipoise, apart from music they are incompatible. Dance Rhythm is too narrow a term for the one, while Speech Rhythm is a satisfactory term for the other. We may coin the term Body Rhythm as giving the necessary extension to the notion of Dance Rhythm. Musical Body Rhythm, even in the slowest paces, is enormously stronger than anything in prosody. It is no exaggeration to say that it is as strong as the pace of a horse. . . . Not even Browning himself could have recited "How They Brought the Good News from Ghent" with comfort while riding a galloping horse; but Schubert's characteristic marches (Op. 121) do not merely imitate that pace, but go far to stimulate it, if played to a regiment of cavalry.²



This description of the rhythmic mental content necessary for the interpretation of music, and the bodily

¹ See Chapter III on the Establishment of the Conditioned Reflex.

² Sir Donald Tovey: *Encyclopædia Britannica*, 273, Article on Rhythm.

obedience to kinaesthetic memory in a completely automatic series of complex movements, is perhaps the best possible attempt to convey something of the significance of musical performance on the great scale.

The rhythmic movement of the individual artist—his control over force and time—is the first obvious origin of musical rhythms; but we must go farther.

The musician's art is dual. The creative imagination and elaboration of musical forms—what we call composition—is the work of one individual. Generally, its performance demands the co-operation of at least two executive artists: singer and accompanist, wood-wind or string quartet, etc., the one exception being where the more elaborate mechanism of the keyed instruments, organ and piano, permits the two hands of the executant to play the part of two different musicians in harmonized voices.

Of what nature is the rhythmic training of the executant? On the afferent side, it includes a complete process of ear training, and the capacity to see musical notation and mentally translate it into musical sound. The efferent process implies, after the full appreciation of musical sounds, the power to perform the actual rhythmic movements necessary to "play" what has been set down by the composer.

This "playing" includes the power to render the finest possible grades of varying energy needed to give loudness or softness of tone. It includes the power to measure the duration of notes, to sustain their vibrations, and to determine the pace of their succession—a temporal control more perfect than any other in the action of the human brain.

The pattern so made obviously unrolls itself in time, like the pattern of dance movements, and is not unlike them in its characteristics; we do not know the whole

pattern of the music till the last note is played; each phrase or subject does not yield up its rhythmical secret till it reaches its resolution; but all that has been here described is only the framework of the music, only the scansion of its true rhythm; that lies, as we have already seen, in the pitch variation which gives us melodic progression and harmonic combination.

By what type of movement in the muscles of the human performer is that essential element controlled?

How does the player reach the point where the varying vibrational speeds of the instrument are waiting to be evoked? How does he use his muscles as part of the pitch excitor which sets up tonic vibrations?

The instrument is tuned to vibration by varying tension; what type of movement does the player employ to sound these varying notes? Is it a dynamic or a temporal variation, or what?

The answer in every case is that he employs a Spatial movement; a movement of fingered touch on the keys of a piano, a movement of varied spatial finger pressure on the strings of the violin, and of spatial adjustment of the bow to connect the vibration with the fingered position, or merely to excite the open strings; all this adjusted to obtain the perfect scale on each string and the greater scale constructed from the positions of all four; a movement of finger control on the stops of the wind or the keys of the brass; a movement of rapid finger plucking, like a delicate dance of elves, on the strings of the harp.

In the kinaesthetic memory of the player, the pitch pattern of the ear is linked to the kinaesthetic space images of his hands, his fingers, his breathing and lip pressure.

"The terms 'up' and 'down' the musical scale connote to the pianist a true spatial up and down movement as

certainly as the rising or falling rapidity of the vibrations they produce; it is indeed difficult to maintain the full measure of the necessary ear training in a pianist, since he has nothing to do with the tuning of his instrument, and is seldom brought face to face with the true meaning of pitch vibrations in the mathematical sense."¹

The voice is the ideal first instrument for the musician, and here, if he is properly trained, he remains physiologically unconscious of any direct action of the vocal chords, pitching under the direction of the ear alone, but constantly experiencing the referred sensation of resonance, in which the higher notes synchronize with the upper, and the lower notes with the lower resonators of head and neck; he, too, acquires the simplest form of Sound Rhythm in Space.

The musician's training is, first, and should be first, a training in oral perception, and then in whatever instrument he is studying, a training in the control of force, space, and temporal movement, necessary to the rhythmic production of musical pattern, from that particular instrument.

So we come back to the original definition of Rhythm with certain modifications:

In musical rhythm when the three elements of Force, Time, and Space are automatically synchronized, *with perfect regard to function*, the result is rhythmical; the time periods being isochronous, the force *continuously adjusted*, and the spatial *element* controlled throughout.²

The words italicized indicate that we are dealing now with an acquired volitional use of Rhythm, not with the fundamental natural law itself; yet here lies the wonder of Music; it is a pure Sound Rhythm, evoked by a Body

¹ The "ordinal" character of all musical pitch is accepted; the question of the nature of the order is still in dispute. See Watt: *Psychology of Sound*, chap. i, pp. 20, 21.

² Elsie Fogerty: *Speaking of English Verse*.

Rhythm which has no object but the evocation of sound. The vocabulary of music is used for musical ends alone; its notes have no conventional logical function to fulfil, beyond the creation of musical design. It is self-existent as an art; it is not required to be "like" anything; it can be completely understood and performed only by a musical executant, and all appreciation of its beauties is heightened by an attempt to study their production. It reaches our emotions along a path peculiar to itself, calling up no confused echoes of everyday uses to blur its harmonies. If music stoops to imitation, it is never to mimicry, but rather to that divine "Mimesis" of the Greeks, which we must yet try to define. Below is a well-known theme from Beethoven's No. 5 Symphony, fundamentally as simple as the "Dickory, dickory dock" of Chapter I, mentally woven into the ticking clock, which illustrates this musical transmutation. It is the rhythm of a man knocking on the door; ultimately it develops into the tremendous phrase marked by the composer's own hand—

So Fate knocks at the door.

Musical "time" is a musical convention, quite apart from the succession of daily life. It deals with the duration and succession, rapid or slow, of sound alone. It is measured off by stresses. Its force is proportional musical force, and is strictly forbidden to destroy the measure and purity of its sound vibration. Its space is a spatial conception of the progression of sound up and down an appointed "scale"; in it we follow sequence with a sense of serial extension; we discover distances, arabesques of pattern, heights and abysses of harmonic perspective, where themes stand out or withdraw into the background and fade one into the other; where voices converse and answer each other, combine and divide at infinite distance

and in geometric time rhythms. From the brain of the composer to the brain of the executant, from the brain of the performer to the brain of the listener, the whole journey is a journey in sound; no knowledge but the instinctive knowledge of the nature of musical beauty is required in order to think, feel, and express what a composer creates and the executant interprets.



(a) Imitative knocking rhythm.

(b) Transformation to musical subject.

Emotion divorced from the grosser senses, thought carried to the pitch of wordless communion, rhythm expounded in terms of rhythmic action through sound alone—these are the language of music.

The achievement of making this art took about four thousand years. Nearly all its stages can be heard and recognized as indigenous in music to-day; clearly marked in some part of the habitable globe; we find them successively in the African force-rhythm of savage tribal

dancing, the indeterminate wavering scales of the Eastern world, the skirl and drone of the bagpipes, the great plain-song of the Church, the pure folk-song of the Appalachian Hills, the negro spiritual, the pompous blare of military band music, the lyric warbling of old ballads, the chamber music of old instrument players. They are recorded in the polyphony of the sixteenth and seventeenth centuries, the chorales and fugues of Bach and the great Masses of the seventeenth and eighteenth centuries, the dogmatic art of a Handel Oratorio, the romantic narrative music of the Sonata, the epic grandeur of the Symphony, the Ballet convention of Italian opera, the incredible complexity of *Tristan*, or the inerrable *Meistersingers*.

The growth of nationalism and individualism in modern music makes criticism more difficult, but progressive types exist at every stage within the rhythms proper to that type. The greatest music remains in essence universal in its appeal.

Religious ritual created true music. The link between Greek modes and Ambrosian chants is clearly established.

Christianity spread most rapidly in the East, and Greek was the universal language of the early liturgies till the third century.

The official recognition of Christianity first came from Constantinople. The creed of the Church was hammered out at Niceae.

In music, fixed pattern was not the first thing to evolve, because music went hand-in-hand with speech, and unconsciously followed the rhythm of ritual words. This form was called the Modal form, because it was based on the intervals of the early Modes or scales, such intervals, that is to say, as could easily be reached by the voices in congregational singing.

Modes came to be associated with orthodoxy and heterodoxy; as a result an enormous collection exists, their variety being due to the way in which they were fitted to the ritual speaking of different people. The greatest collection of all was that of Northern Italy, then dominated by the representatives of the Eastern Empire, the Western having ceased to exist. These are associated with the name of St. Ambrose of Milan. But African, Celtic, and Gallican (French) Churches all differed from this Latin or Milanese ritual, and each had its collection, some of which were incorporated into the great Gregorian collection, while other fragments have been recovered in recent years, more particularly in Ireland. In the Byzantine Church, Ethiopian or Coptic forms were incorporated, and it naturally exercised a commanding influence over the song of the Western Church; while Spain maintained her individual Mozarabian literature, forming an important element in Christian song, up to its unification with Rome in the fifteenth century. Nearly two thousand compositions are included in the great Gregorian collection. They use antiphonal responses, particularly in the Psalms, maintaining one level reciting note, and following the rhythm of the words. Gradually an attempt to reproduce the pitch inflexion of the words also gives a general rise to the middle, and fall to the end, of the tune. From the point of view of verse, the most interesting change is that from variety by the length and shortness of syllables, to which we give the name of *Quantity*, to variety by stress on individual sounds and lightness in others, to which we give the name of "*Accent*."¹

Probably the change was due to the singing of Greek and Latin by people who had no idea of classical pronunciation. *Quantity* in a foreign language is very

¹ See Chapter VIII, p. 166.

difficult to determine. In the congregational singing of hymns it would be almost impossible. One of the greatest writers of such hymns was a Syrian, Ephraim by name, and his Greek is entirely free from quantity. During his lifetime (A.D. 303-373) his verse was translated into Latin by the Bishop of Poitiers, and the Latin form was incorporated in the Ambrosian collection. In these hymns we have a much closer advance to modern rhythms.¹

Melodic growth then naturally followed the development of instrumental music, and directly the range of pitch grew greater the rhythms ceased to maintain their closed or circular repeating form. Popular songs, with their association with movement, maintained their rhythmic character, and the troubadours, inspired by secular melodies, made fine chanting rhythms in which both words and music travel through combined measured pattern.

So, on the one side, we have the religious music with vague and uncertain rhythm, developing harmony by the simple expedient of letting the voices sing one above the other, at different pitches, with very little strict marking of fixed rhythms, out of which grew our Plain-song—a mystery peculiar to the Church—and on the other, the sharp rhythmic beat of popular melody growing into the complicated rhythms of Trouveres and Troubadours, full of the rhythmic beats of marching, riding, and the dance.

Religious ritual remains one of the two most dominant influences in the rhythmic control of music, from that early time till now.² It inspired Bach's Mass in B Minor and Beethoven's overwhelming *Missa Solemnis*, Op. 123; its democracy is expressed in the Choral Symphony, it even fitfully illumines the sensuous magic of *Parsifal*.

¹ Donald H. Ferguson, op. cit.

² Donald H. Ferguson, op. cit.

By their hymns may we judge them? Perhaps the verdict would be unnecessarily severe; but must this tremendous vehicle of emotional discipline be systematically perverted or ignored in the vast majority of religious institutions?

Réné Dumesnil quotes in his *Rythme Musical* the Paris performance of a Mass by Rossini, for which Rossini was not responsible, and gives this description by Joseph d'Ortigue:

The "Kyrie" is set to the entrance "March of Othello." The "Gloria" opens with the introductory chorus from the same work, with several other fragments up to the second half of the final verse, *Cum Sancto Spiritu!* words which the adapter has fitted into the stretto of the quintet from *Cenerentola*, a farcical work of the most "unbuttoned" type. "*Allegro Rapido*" in three-time. It is impossible to conceive the extravagant and grotesque effect of these words declaimed syllabically, word for note, on this accelerated movement. The rest of the music was equally appropriate. The "Credo" opens on the Aria of the *Barber of Seville*, then the warlike duets from *Tancred* and *Othello*, with a "Resurrexit" on flowery cadenzas, and finally "*Et Vitam Venturi Saeculi*" set to the subject of Arsace's "Finale" from *Semiramide*.¹

Fortunately, a return to saner traditions has already been established.

Polyphonic music had its origin in the male quartet, a complication of harmonic structure followed, and a gradual identification of rhythm with time, which ultimately destroyed the link between speech and song. The eighteenth century saw the triumph of instrumental against vocal music under Italian influence, which Mr. Pepys so constantly deploras. We are hardly yet at the end of the great historic uprising of the Germanic nations in musical form.

It is very interesting to notice that nearly all the

¹ René Dumesnil: *Le Rythme Musical*.

musical conflicts have been due to the confusion between Pattern and Rhythm. The pattern to which people were accustomed became to them the only possible rhythm. New expressions of rhythm were heterodox; discussions as to the rightness or wrongness of certain note-groupings were unending; all waste of time, because the next generation found it possible to dislike both types of work impartially as out of date.

It is nevertheless easier to trace the evolution of pattern in music than in any other form of art, for three reasons; first, because from the beginning it exhibits a certain freedom, an escape from what may be called the closed or circle pattern, which is the first idea of a rhythmic form; a good example of this closed form can be found in the "Catch," out of which the "Canon" later developed. It consists in a short, metric phrase, sung by one voice, divided into two parts, which is called binal form. Our childhood's example was:

Three Blind Mice, See how they run.

When the first singer reaches the second half, the second singer begins the tune again, and when the third comes in he follows the same order. Then, the first singer begins his tune again so that we gradually reach a point when each voice is singing a different part of the tune: a rudimentary "canon" is established.

Reduced to their mathematical basis, the actual number of metric forms is extraordinarily small. Multiplied through the incredible varieties of melodic and harmonic rhythm, it is almost limitless. All that the critical judgment has the right to demand is integrity of style.

The invention of triple time, to which trochee and iambic, dactile and anapeste can all be fitted in a measure of $6/4$ time, led to the universal adoption in the twelfth and thirteenth centuries of triple measure, and so har-

monies and melodies were combined on the basis of a definite time-signature, which gradually destroyed the dependence of music upon words, but enriched the characteristic rhythm to a new beauty. Rhythms are now patterns in music alone, to whose measure words must be bent. Music has acquired its own form and its patterns are lengthening out into phrases, which can be sung one against the other in a melodic form.

The fifteenth century is full of every kind of example of pattern for pattern's sake, both in verse and in music. Those which survived, survived from their intrinsic beauty, almost accidentally discovered at times in the improvisations of the singer. All harmony appeared only as a series of consecutive notes sung in different voices, a "horizontal" view. As Sir Hubert Parry delightfully expresses it, "Chords were only lumps of harmony." Musical notation began by the notation of pitch and then achieved the notation of rhythm, when it became important for voices to get to the same point in the rhythm at exactly the same time, and pauses became of rhythmic value. Dance rhythm, especially that from instrumental music, firmly established long, equal phrases of temporal rhythm.

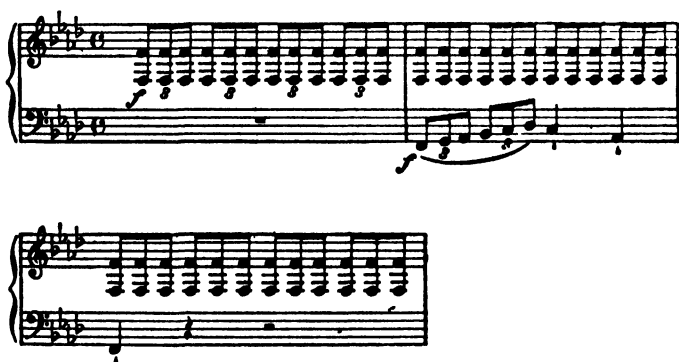
The idea of a compound rhythm, built upon the foundation of the bar pattern and the phrase pattern, is well described by Professor Donald Ferguson¹ as "musical rhetoric." The emotional purpose of the music grows to a position of independence apart from words. The revival of classic drama in the Renaissance drew attention to Greek musical theories, and out of the combination Opera was born. Recitative carried on the tradition of the spoken music, but it was now supported and phrased by chords. The Aria became the emotional comment on the action, and here the music triumphed absolutely over

¹ Op. cit.

the words, both in pitch and the setting of many notes, to the one syllable. So the ground was ready in the more passionate days of religious controversy for Bach's great output of Cantatas, Oratorios, and Choruses, and for the rhythmic wonder of the Fugue. No choral work has ever exceeded in rhythmic perfection his great Mass in B Minor, and in the Chorale he trained the common people to the perception of the beauty of rhythm, harmony, and melody combined.

The rhythm of melody is always of a more extended flight than that of pure rhythmic figures; one passage from a song almost too familiar to need quotation, Schubert's setting of the *Erl-King*, will illustrate the balance achieved in all these combined elements. We have first the rhythmic accompaniment; it is fundamentally representational. The gallop of the horses' hoofs, first steady and firm, afterwards broken, and at last wild and frantic.(1)

(1)



Above it is a narrative; a declamatory setting of the voice part, telling the story and the question and answer of father and child.(2)

Then, the whole rhythm changes; the accompaniment

(2)



does not lose its fundamental beat, but it takes an arpeggio character and harmonizes with the Erl-King's spell-binding, the most melodic treatment of the theme in the whole of the song.(1)

(1)



With the child's terrified cries, the gallop returns more insistent than ever, the Erl-King's threats giving us the dramatized version of his first theme; discords mark the climax of the child's terror, and then we have the frantic rush of accompaniment and narrative ending in a dramatic pause, followed by the last words,(3)



"In seinen Armen das Kind war tod," sung parlando to notes that follow the natural inflexion of the voice.

It is plain here that, while all the technical obligations

(3)



of musical construction, and even the simple figures of a very definite "pattern," are here represented, while the "verses" form broadly a set of repeated stanzaic forms, yet the idea of repetition has vanished, and the recurrent phrases are harmonized into an intellectual

whole, which is part of the complete re-creation of life in musical rhythms. The theme comes to have an intellectual meaning, as well as an emotional force, a combination which Beethoven carried to perfection in the orchestra, and which Wagner was to employ in the system of the "Leit-motiv"; a phrase of strong rhythmical force, bearing a musical significance which suggests the picture of a certain incident or personality to the composer's mind. By association of this melody with every mention of a particular personality or incident in the text, a certain emotional language of music is built up; it enables the composer to carry on our interest through an enormous musical narrative without having recourse to any closed melodies; arias, that is to say, such as are employed by earlier composers, where the characters get through a certain bit of singing with instrumental adjuncts, and then with a warning in the orchestra, begins another detached episode. Such a work as the *Ring* would be impossible, either in thematic invention, or in its power to hold the attention of an audience, if we were not constantly arrested by the recurrent use of themes, which grow more and more familiar, and enable the orchestra to comment on the very thoughts of the characters, and on the action which passes over the whole Stage, while recalling other and more subtle memories of earlier events in the Drama.

It must, however, be plain that the rhythms here are, like those of all great art, the rhythms behind life itself, and man's intellectual re-creation of them is a great achievement of imaginative interpretation; the theme is called up by the necessity of the action, by its emotional and dramatic character, not by the formal necessity for repeating a phrase at intervals of so many bars, without reference to its dramatic significance.¹

¹ See Chapter X.

While this progression in rhythm is common in turn to every form of art, the fact that music is free to create its patterns orchestrally, without reference to the logical and dramatic meaning of words, or to the representational necessities of pictorial art, gives to the freest and most dramatic music a certain abstract character in which we can trace more exactly the elements of rhythmic pattern and their behaviour and use.

In music, then, for the first time, rhythm can be presented without the intervention of the representational or constructive arts in concrete reality.

The architect must build with consideration of his material and of the uses to which each part of his construction must be put. He must obey the laws of its mathematical stability.

The painter, working in his pigments, in however abstract a manner, must indicate some measure of reality in the objects his imagination bodies forth.

The poet must speak a recognizable language.

The great craftsman is fundamentally serving the demands of a utilitarian convention in contemporary decorative art, and is bound by the essential nature of his material. Music expresses only the musical interpretation of life.

The musician's language is Rhythm itself. The range of his instrumental resources is so large it hardly needs to confine his imagination. His design is based on the elements of force, time, musical pitch, and quality of tone, the audible factors of our very perception of Rhythm itself. His syntax exists as melody and harmony, his perception of laws is purely aesthetic, though he may understand their mathematical sanctions. However mighty may be the emotional and moral results of his composition, he is subject to no claims of utility or of didactic worth. He is the mathematician of the

arts, and can ignore the "intention" of the music he creates. ✓

More than for any other artist Rhythm is his all-sufficing medium, and his interpretation is more completely subjective and subconscious than that of painter or poet. A child can be a great musician; a boy Mozart or Mendelssohn can memorize a whole composition at a single hearing by his mental response to its rhythmic form; he lives in music as a bird in flight with hardly any acquired capacity.

However laborious and exhausting may be the burden of musical composition, it demands no achievement but that of music, uses no medium but sound, designs no patterns but those that must pass the test of musical performance. It is natural that in a sense all arts should strain to achieve this freedom and tend towards the nature of musical expression; the effort may often destroy their integrity. It is also natural that, more even than poetry or painting, music itself should tend to intensify its freedom from the control of formal pattern and expand towards complete expressionism.

It is perhaps here that the danger of modern composers lies. From the earliest times in European music, the formal recognition of the seven-tone scale with its octave and its fifth began to develop. The foundation of rhythm lay largely in the marked melodic progression it implied with its fixed "resolutions" from the seventh, the fifth, and, later, the fourth. However relaxed this key tonality became, however its rules might be broken in the fervour of impassioned imagination, they were there to *be* broken. The diatonic scale was the basis of the executant's fingering and of instrumental construction and tuning. Key colour and variety made rhythmic construction plain and emotional variety intelligible. Now the basis is shifted in many modernist writers to a

scale of twelve equal notes, a succession of regular half tones. Music written in this twelve-note scale is called "atonal." Discords and concords have ceased to exist. It allows no change of the whole key; as with the late dramatic blank verse of the seventeenth century licence has become the rule.

The tremendous harmonic development of orchestral music from Beethoven to Berlioz, even the ear perversions of the "crooner," may have prepared the way; but it looks perilously like the rhythmic disintegration which usually leads back to an age of uninspired academic correctness.

Our listeners are less musically competent than the universally educated amateurs of the late nineteenth century, and one more danger threatens. The usual habit of turning on music, good or bad, as a background to other work. Not to be listened to, but to be the means of suspending all perception of sound. The destruction of quality by the loud-speaker and the bad gramophone achieves the same end, and most terrible of all, in many theatres a mechanical blare of uncoordinated noise bursts out at each interval to excite the audience to competitive efforts which would be the envy of the Zoo parrot house. Having learnt no music as children, many adults have lost all power of coherent listening. Can we understand a language we have never tried to speak?

The loss of physical rhythm involved in all this will have results we cannot yet measure.

It should be clear that one thing is a necessity of modern education—that every boy and girl should learn to hear, to sing, and to move to the best music—the most characteristic movement of which they are capable. If possible, also, to make some kind of music for themselves; the "percussion band" is amply sufficient if it is properly run.

There is no such thing as incurable tone-deafness in a hearing person; even the deaf can feel a variety of kinaesthetic rhythms, as Dr. Franklin's wonderful work has made clear.¹

Music is the master craft of the world to-day. One of the supreme human characteristics of our race, in its double form of music and of words. Art, drama, poetry, have all been influenced profoundly by the character of modern music. Painting has aspired to deal with light, as music deals with sound; poetry itself relaxed its metric fetters, and learnt new rhythms from music, in Shakespeare, in Milton, in Walt Whitman, in Browning, in Bridges—all musically-minded poets, and all among our great metrists. When we have not learnt enough music to make us capable of understanding this, we are aliens, not citizens, of the modern world. We might easily reach a position when a great musical festival in England would be crowded as the little village and urban soccer teams crowd to the Cup Tie Final, and for the same kind of reason—because they have all tried to knock a ball about in their boyhood.

¹ "The Deaf Mute," P. Franklin, F.R.C.S., *The Lancet*, Feb. 9, 1935.

CHAPTER VIII

RHYTHM IN POETRY

IN order to understand the general nature of English poetic Rhythm, it is not necessary to make an elaborate analysis of the individual metric patterns which it is possible to distinguish in English verse.

Throughout these chapters it must have become clear that the infinite variety of pattern created by rhythmic action is a thing quite different from the nature of Rhythm itself.

We might tabulate every figure employed in writing in $3/4$ musical time without understanding the rhythmic significance of any one of them. They convey little meaning apart from the musical context in which they occur.

The matter is further complicated by an effort made to adapt to the stress prosody of English verse terms, rules, and definitions originally valid for the classic measures of Greek speech. Imposed later for a time on Latin prosody, quite possibly with artificial "correctness," these measures were revived at the time of the Italian Renaissance. After the total failure of misguided attempts to construct speakable verse on their models, the terminology was imposed on seventeenth-century prosody in England with complete confusion as to the nature of the connection between Classical "quantity" and English stress verse.¹

It is more practical to consider first what is the actual nature of poetic structure, and how its rhythms arise spontaneously in the mind of a poet as an inspiration through which he re-creates his vision of life.²

¹ Spenser's Metric experiments under the direction of Gabriel Harvey are a good example.

² See Omond; *English Metrists*.

From the very nature of speech, it is clear that there can be hardly any form of Rhythm known to man which cannot give rise in his imagination to corresponding word rhythms.

Twin-born with music, and taking the very terms of its scansion from the dance, verse may re-create for us the cadence of an air, the subject of a fugue, or any form of bodily movement known to man. The natural turn of a dramatic phrase may serve to create new patterns of verse such as Browning found for his *Dramatic Lyrics*.

Our free lyric metres and the suggestive Onomatopoeia of our vocabulary may mimic the flight or the call of a bird or the ripple of a running brook.

In a more forced alliteration and assonance we may copy classic models of "mimesis," in such couplets as those of Pope's *Essay on Criticism* or Byron's *Don Juan*.

As music is at its greatest when it seeks within itself alone for its creative rhythms, so the greatest, the most sublime of all poetry finds its expression in verse where verbal music alone suffices.

We cannot decide at the moment whether it is the vivid significance of the words, their overwhelming force of association, or the exquisite cadence of their syllables that give their magic power. Among a hundred instances take these:

Hamlet's last plea:

Absent thee from felicity awhile,
And in this harsh world draw thy breath in pain
To tell my story.

Romeo's last defiance of

The lean abhorrèd monster ¹

who has robbed him of his love.

¹ *Romeo and Juliet*, Act v, Scene 3. ,

Donne's last trumpets, which out-clamour all Berlioz's kettle-drums:

At the round earth's imagined corners blow
Your trumpets Angels, and arise arise
From death you numberless infinities
Of souls, and to your scattered bodies go.

Music could but disfigure such lines as Landor's:

Past ruined Ilion Helen lives
Alcestis rises from the shades.
Verse calls them forth, 'tis verse that gives
Immortal youth to mortal maids.

Soon shall Oblivion's deepening veil
Hide all the peopled hills you see,
The gay the proud. While lovers hail
These many summers, you and me.

These are, indeed, the "best words in the best order."

But five forms of rhythmic inspiration do in a measure seem to evoke the flow of all our greatest poetic inspiration with the exception of our great treasury of narrative verse.

1. Measures giving either the swing of a dance or the lilt of a ballad, such as the latest of our singers to end his song, A. E. Housman, gave us.

2. Measures which scan the very phrases of dramatic and emotional speech, either in Drama or in such Verse as Browning's *De gustibus*.

3. Deliberate Onomatopoeic use of alliteration and assonance in "regular" metres without rhythmic variation. Generally used in "satyric" verse.

4. Purely Onomatopoeic sound pictures, like Shelley's *Skylark*, and many of Swinburne's lyrics, where at times the words seem drawn into the verse by the fitness of their sound, rather than by their significance.

5. Purely verbal rhythms, where words take life and kindle into meaning and music, in which we are conscious of no division between significance and sound.

The patterns created in these rhythms are made by a very simple metric device. The recurrence of stresses at regular intervals, and pauses, like musical rests, to take the place of stresses, or of half-beats, which lack a syllable.

Unrhymed lines more often end with an extra syllable, and in rhymed verse the rhyme-word is almost always a stressed word, vital to the sense of the line. All our verse is markedly Assonant—linked by chiming vowels which at times give internal rhymes; it is increasingly wary of alliteration, which, with our consonantal word structure, is a little too easy, and jingles rather monotonously. A stress “carries” as many as two heavy syllables on either side, and at a pinch three light ones to avoid at all costs breaking the verbal unity of a word or phrase. Every verse stress is a logical stress.

I saw Eternity the other night
Like a great Ring of pure and endless light
All calm | as it was bright.

And round beneath it, Time in hours, days years
Driv'n | by the spheres
Like a great shadow moved, | in which the world
And all her train were hurl'd.¹

These seven lines contain eight assonances in “i,” and eight in “er;” three rhymes in the first and four in the

¹ Henry Vaughan: *The World*. •

second sound. "Bright" carries a triplet of light syllables before it.

The splendidly rhetorical verse of our nearest European neighbours numbers syllables meticulously; stresses almost entirely with pitch (tonic) accents as in the Alexandrine, where the six syllables of each half-line carry two tonic accents only, on the second and sixth feet of each half measure:

Iblis leva la tête, et tout a coup l'infâme
 Ebloui se courba sous l'abîme vermeil
 Car Dieu, de l'Arraigné, avait fait le Soleil.¹

Out of this primary pulse beat lines are built up into what is more properly called "Metre," Hexameter, Pentameter, etc. These lines are linked into an infinite variety of Stanzaic forms ranging from the couplet to the fourteen lines of the true sonnet.

Verse is based on the natural cadence of a spoken language.

The Rhythm of Elizabethan blank verse was obviously very close to the higher level of contemporary speech. Marlowe gave it its mode, its stateliness, and its gift of climax.

Blank verse sequences vary from single closed lines to the overpowering paragraphs of Milton; Tennyson's lyric experiments in the rather heavy stressed lines of the *Morte d'Arthur* and the perfect *Come down, O maid, of The Princess*, are its last successful variation.

The history of this one measure alone would illustrate the common experience in rhythmic pattern, where we have already seen a clearly regular form relax; first into the perfection of balanced freedom, then, losing its essential character, become meaningless and without

¹ Victor Hugo: *Puissance égale bonté*.

power to give the necessary resistance to the flow of creative energy, so that it remains lifeless, and attracts only those who seek for easy by-paths in artistic achievement. To recover later, under the impulse of some change in national taste, or by individual inspiration, its early splendour in new forms.

Shakespeare, as his supreme achievement, gave it the capacity for suggesting and expressing individual character. At first, he tried for regularity; yet, as early as the *Midsummer Night's Dream*, we hear the authentic roll of the great Shakespearean line,

The poet's eye, in a fine frenzy rolling,
Doth glance from Heaven to earth, from earth to Heaven,
And as imagination bodies forth
The forms of things unknown, the poet's pen
Turns them to shapes and gives to airy nothing
A local habitation and a name.

In that play there are no less than eleven various experimental rhythms, ranging from Puck's trimeter to Oberon's heroic couplets, from Titania's lullaby to Bottom the Weaver's

Ousel-cock so black of hue,
from Hyppolita's

I was with Hercules and Cadmus once,
When in a wood of Crete they bay'd the bear,
to

I see their knavery;
This is to make an ass of me;
To fright me, if they could.

Later on he found blank verse sufficient for all his needs, and let Ariel and Caliban speak it with an equal force of individuality.

Shakespeare in his later plays gave to blank verse a

splendour of rhythmic significance which he seldom achieved while he followed the stricter line of Marlowe. The model seemed too easy; the uninspired saw no difference between—

The cloud capped towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve
And, like this insubstantial pageant faded,
Leave not a wrack behind; we are such stuff
As dreams are made on, and our little life
Is rounded with a sleep.

and

Must I despise thee too as well as hate thee?
Complain of grief? Complain thou art a man!
Priam from fortune's lofty summit fell;
Great Alexander midst his conquests mourned;
Heroes and demi-gods have known their sorrows;
Caesars have wept; and I have had my blow.

Young: *The Revenge*

Milton moulded epic blank verse to a measure full of independent vital strength, subduing, but never breaking, its metric regularity; he counterpointed on it the music of his paragraph rhythm, so that every sense stress elucidates the music of the lines, yet maintains verbal unity.¹

Some natural tears they dropt, but wiped them soon,
The world was all before them, where to choose
Their place of rest, and Providence their guide;
They hand in hand with wandering steps and slow
Through Eden took their solitary way.

Paradise Lost

Like the bards of old, his darkened eyes never read a line of either *Paradise* or of *Samson*; his ear alone controlled

¹ Bridges: *Miltonic Prosody: A study of Metre*.

those mighty cadences, and they were wrought out in audible speech, not like the work of those late seventeenth century poetasters, who seem always to be

Fingering out their decimated prose.¹

It cannot be too constantly remembered that written or printed verse can never be anything but the record of the sounds present in the poet's mind; before we can understand the significance of his rhythms, we must re-translate it in our minds from the visible symbols to the music he heard in *his* mind.

Constant dealing with books of verse and some vague memories of the falsely marked syllables of classic verse led to the extraordinary practice of constant metric scansion. The preceptor killed all sense of rhythm in the unfortunate children who were asked to note the "mistakes" and "irregularities" of the most perfect rhythmic lines. Fortunately no two could agree on the exact compromise required to correct them, and with the revival of spoken verse in the present century the love of Poetry seems to be born again.

Tracing the history of our whole poetic form, we find in lyric verse many different elements; the early Lilt, with its pitch change on the stressed note:

This æ nighte, this æ nighte,
 Every nighte and alle,
 Fire and fleet and candle-lighte,
 And Christe receive thy saule,²

where we hear the very steps and the gestures of the asperging ritual.

¹ Clifford Bax: *The Poetasters of Ispahan*.

² A "Lyke-Wake" Dirge.

The refrain dominates our early verse; in ballads it is the binding force of the rhythm:

Why does your brand sae drop wi' blude,
 Edward, Edward.
 Why does your brand sae drop wi' blude,
 And why sae sad gang ye, O?
 O I hae killed my hawk sae gude,
 Mither, mither,
 O I hae killed my hawk sae gude,
 And I had nae mair but he, O.

Sometimes nothing but the refrain, dressed up in a new guise, seems to remain from the old ballad:

O Keith of Ravelston, the sorrows of thy line.

Often the refrain was a mere series of sounds giving the minstrel time to improvise or to remember his next words: this is properly called a "burden," or Bourdon, from the undertone of part-singing; good examples are the—

Ay lally, O lilly lally

All i' the night sae early

or the better known

Binnorie, O Binnorie

and "Hynd Horn," with its double refrain, one a bourdon, and the other a lovely significant cadence:

O I'll take the scales o' Gowd frae my hair,
 With a hey lilllelu and a how lo lan;
 And I'll follow you for evermair
 And the birk and the broom blows bonnie.

When a great artist like Christian McNab speaks this ballad, the whole intensity of its meaning seems to rise

and fall in the lovely swing of the refrain, which never sinks into meaningless chanting.

There is no dividing line between the ballad in its greater, almost epic, form and the narrative and chivalric lays of our earlier verse, but a foreign influence comes in through the perfection of the syllabic form, softened by that laureate clerk, Maistre Petrark, who numbered out the patterns of Dante's great Vision.

Without passing from the syllabic and the line music, we have already the simple isochronous stress; force marking time—in the infinite variety of the actual metre—and the lovely spatial music of the vowels gaining its climax in rhyme.

And now we see the rhyme marking out the complex pattern in the true sonnet form.

Since Chaucer's day our resources of rhyme have been almost incredible; rich rhyme: "devyse," "suffyse"; semi-Hudibrastic rhyme, in "great labour" and "conquerour"; or internal rhyme, when the "conquerour" of one line is echoed by the "emperour" four lines further down, two beats from the end, are among the examples in Chaucer's own verse which illustrate its freedom.¹

By some ill-fortune of dual language, or of a shifting allegiance between France and England, or of the long struggle of the Roses, we lost what should have been our national epic, the song of Arthur and his Knights, though Mallory consoles us more than well for the loss; but with the growth of instrumental music, and the conscious care that the dual speech engenders, Lyric, early in the sixteenth century, becomes our unquestioned glory.

While music was simple, it was possible to wed such words to it with perfect harmony, as Milton dreamed might be done.

¹ *The Book of the Duchess.*

"Lines set to an air," or "Words set to music" fill page after page of our anthologies with their magic. One can no more distinguish between their perfection than between the beauty of one rose and another.

There is a lady sweet and kind
Was never face so pleased my mind.
I did but see her passing by,
And yet I love her till I die.

Ford's Music Book

But at the coming of the King of Heaven
All's set at six and seven;
We wallow in our sin,
Christ cannot find a chamber in the Inn,
We entertain Him always like a stranger,
And, as at first, still lodge Him in the manger.

Preparations, Christ Church MSS.

Weep you no more, sad fountains,
What need you flow so fast?
Look how the snowy mountains
Heaven's sun doth gently haste!

John Dowland's Airs

We pass without a break to the known singers and the splendour of Spenser, of the lyric Shakespeare, or of Donne, and never again is there a break in the splendid succession of English poetry.

From the point of view of verse, we see the same rhythmic building up already visible in music and in craft.

Pulse Beat, sometimes syllabically fixed as "feet," sometimes only by verbal unity.

Linear Rhythm, the numbering of the pulse beats into metre, "Pentameter," "Hexameter," etc., with rhyme to mark the line. Free verse lacks this measure.

Stanzaic Rhythm, ranging from couplet to sonnet or ode, with rhyme to link the lines together, into a triple pattern.

Blank verse unlinked by rhyme acquires a logical paragraph rhythm. Free verse has pulse beat and paragraph form, but no regular linear basis.

When Lilacs last in the door yard bloomed,
And the great star early drooped in the western sky in the night,
I mourn'd and yet shall mourn with ever-returning spring.

Walt Whitman: *Leaves of Grass*

At each step the link between significance and form draws closer.

We cannot conceive the great sayings of poetry in any words but their original form, and the same thought comes freshly to our mind as it is refracted by the different light of the poet's genius. Set beside the strict rhythm of the Lyke-Wake Dirge, Stevenson's requiem; in its lyric freedom:

This be the verse you grave for me;
Here he lies where he long'd to be;
Home is the sailor, home from sea,
And the hunter home from the hill,

or the more mannered ruggedness of Henley:

So be my passing;
My task accomplish'd and the long day done,
My wages taken, and in my heart
Some late lark singing,
Let me be gather'd to the quiet west
The sundown splendid and serene
Death.

As in all other rhythmic development which we have studied, we see that here periodicity is taking the place of repetition; and that cadence, which includes the

element of pitch variation and verbal phrasing, has ceased to correspond with metric stress, and begins to mark the grouping of the logical units of thought. Rhythm is freeing itself from rigid pattern in our perceptions. If we turn to prose, the process is complete.

That, besides this patterned rhythm, however freely it may be worked out, there is a speech rhythm which is neither more nor less than the Semantic mode of thought, a few lines of prose will show:

A faint wind, more like a moving coolness than a stream of air, passed down the glade from time to time; so that even in my great chamber the air was being renewed all night long. I have not often enjoyed a more serene possession of myself, nor felt more independent of material aids.

There is one other great form of verse, for which a strange and special quality is required, which has been achieved in its perfect form only twice in the history of the world, in Greece, and in Elizabethan England: Poetical Drama.

Greek Drama united within itself every form of beauty. But here its metric character alone concerns us. It was a perfect blending of the lyric Ode, and of dramatic Dialogue, united by passages in which the actors and the chorus together achieved a certain kind of dithyrambic climax, which one would think must have been the supreme achievement of emotional force in poetry. The criticisms of this form, as has been already pointed out, date many years after its complete expression; drawing its origin from folk-dance and song, it had at its disposal great flexibility of metric form in the odes and choruses, but in the dialogue passages and long speeches, a line—the dramatic hexameter—which obviously corresponded in some definite manner to the most perfect speech of the country, as English blank verse

and the French Alexandrine correspond to the language of their day.

The rhythmic tradition which this form of drama imposed on the theatre will be discussed in a later chapter, but from the point of view of dramatic writing it unquestionably established the value of climax and of sharp antithetic question and answer.

Through the medium of Latin verse and a certain tradition of Greek influence in the South of France these characteristics are transmitted to the faintly stressed French Alexandrine with its beautiful pitch accentuation.

The influence of French verse on English poetry after the Restoration makes it necessary to consider once more its general character, consisting in what our poet metrists called "numbers." The actual syllables in the lines are very strictly numbered, but, in addition, a tonic accent not related to the significance of the word, but to its position in the line, is placed upon certain syllables, giving a very marked cadence to the whole measure.

It is possible here to illustrate very clearly the point that unless we speak a language very well, we cannot hear its metres; but first, what is the significance of "Hearing a metre?"¹ On page 76 Bergson's account of kinaesthetic memory of syllables has already been fully quoted. We know what it is to be able to call up within our minds the word tune or cadence of a particular line, and not to be able to recall the words; we can remember, say, three lines of a familiar hymn, but not the fourth, and we fill it out with "te-tum-te-tee." We can remember this cadence, and so beat it out independently of the words. But let us suppose that we know only that and not the significance of any words in the language. We should be able to mark only the barest

¹ See Chapter VII, p. 126.

metric scansion, and we should inevitably translate it into terms of our own language memories. Here is an example: in Malone's note to Dryden's *Discourse on Epic Poetry*, occurs the astonishing statement that the rhythm of a French Alexandrine line is exactly like:

A cobbler there was and he sat in a stall.

Try this upon one of the finest of French Alexandrines:

Mes yeux alors, mes yeux, n'avaient pas vu son fils!

Mes yeux | alors, mes yeux
n'avaient pas vu | son fils.

With difficulty it can be accomplished. But anything more unlike the true tonic lilt of the accents than this jog-trot declamation it is impossible to imagine. The effect of syllabic numeration was clearly realized by Pope in his heroic couplet; one of the most magnificent measures of English verse:

Lo! thy dread Empire, Chaos, is restor'd;
Light dies before thy uncreating word;
Thy hand, great Anarch! Lets the curtain fall,
And universal Darkness buries All.

But this did not prevent him from mis-stressing the Alexandrine in his famous parody, which will hardly be convincing if we give it its proper four stresses.

Which like a wounded snake | drags its slow length along¹
instead of—

Which like a wounded snake | drags its slow length along
with its two superfluous stresses.

¹ Cf. *The Speaking of English Verse*, Elsie Fogerty.

Here we have a rhythm based on syllabic numeration and the isochronous fall of stresses without either duration of syllables or pitch accent.

A step further brings us to the true secret of English verse; the fact that none of our great poets who have written unconsciously have kept the number of their syllables exact, but have counted the stresses and not the syllables:

Thou who didst waken from his summer dreams
The blue Mediterranean | where he lay,
Lulled by the coil of his crystalline streams,

where the word "Mediterranean" carries five syllables on its one stress, followed by a rest taking the place of one missing stress. The following fundamental principles of English metre formulated by Bridges and by Omond¹ very briefly sum up not the theories but the practice of great English metrists.

1. Every English verse stress is a sense stress, with the exception of certain close rhymes in couplets or quatrains.

2. The principle of English metre is based on the periodical recurrence of isochronous stresses.

3. Each stress carries a maximum of one heavy and two light syllables on either side of the stress. Three light syllables of the nature of a triplet sometimes take the place of the two, when the line generally lacks one of its stresses.

4. A rest pause may take the place of a stress. (See "Mediterranean" above.)

5. Words joined in verbal unity must be joined to a single stress. Ex.:

The world | forgetting, | by the world | forgot

not

The world | forget | ting by | the world | forgot

¹ Omond: *A Study of English Metre*. *

which would break both the rule of logical stress and the rule of verbal unity. Quantity plays no direct part in English verse, although some lovely lines show us its use.

With Truth and Peace, and Love shall ever shine.

MILTON

Thou'rt slave to fate, chance, kings and desperate men.

DONNE

Silent, bare

Ships, towers, domes, theatres, and temples lie.

WORDSWORTH

This, then, is the actual basis of our verse patterns, not an accidental one, but built up on the natural character of our word rhythms.

In Chapter VII it has already been made clear that the art of Music admits of no division between Content and Form. It does not, like Painting, make use of the inspiration of the visible world to call out the glory of its technique. We cannot think of Music except in terms of itself. We all instinctively feel "programme music" as a declension from the true greatness of the art. We dance to music, we do not make music to a dance, and whole realms of music like the Bach Fugues show us musical design as the sum of musical significance. When lines are written to an air, the words must follow the regularity of the musical phrase, and becomes inseparable from it, as in

Trees where you walk, &c.

When a musician sets words he forces much of their rhythm to conform to his musical forms, and every poet feels that for him the most beautiful setting of his words destroys them for ever as a poem.

It is this conterminous unity which justifies the statement that all the arts tend to approximate to the ideal of musical expression. That is to say, they all attempt to produce a mastery over material and a unity between form and significance in some way comparable to that which is essential to the very existence of music. The case of poetry is so entirely different that it is not easy to make it clear to those who have always interested themselves in poems that pleased them without much idea of their actual structural character. Yet, our very terminology helps to express the distinction. We speak habitually of poetry and of verse as two distinct things; we extend the use of the term "Poetry," or its adjective "poetic," to a very wide range of subjects: dancing, decorative or landscape painting, even to personal physical beauty, or the impression left on the mind by some romantic figure of the past; the gastronome might even apply it to the perfect omelette. But Verse is a concrete and definite thing, a form of words arranged in metrical patterns, based on the spoken character of individual languages.

"Individual languages": it is strange that it should be necessary to emphasize this fact, or to remind people that it is not possible for us to judge the beauty of Verse in a language which we, ourselves, have never freely spoken. A sort of metric translation does occur in the case of those who, being excellent classical scholars, have adopted an English convention to represent the classic original with undeviating regularity. The fact that an Athenian of the sixth century, or a Latin of the first century B.C., would be politely interested in the strange sounds, but unable to understand a syllable of them, shows how difficult it must be to accept metrical theories from classical scholars.¹

¹ See Bridges: "Letter to a Musician," *The Poetry Review*.

National distinctions in poetic form spring from the natural speech rhythm of their people. It is apparent that the basis of Greek speech was a marked difference in the time it took to sound one vowel rather than another; our nearest approach to such a difference in English is heard in the difference of time it takes to speak the word "Pine" and the word "Pin." Only the difference does not strike our ear clearly in ordinary conversation. First, because no one has ever tried to make the clear marking of such differences an element in the ordinary training of good speech, but, above all, because the quality of the two sounds is so different. The vowel sound in "i" is a very long diphthong, made up roughly of the two sounds "uh-i"; the sound in "pin" is the second highest resonation of the resonator scale, and in length it is, if anything, the short sound of "ee," but with the tongue slightly less tense.

If you present to children two circles, the one brown and the other green, of which one is slightly larger than the other, and ask the difference between them, they will always notice the colour before they notice the size, and so our ears, intent on quality, grow insensitive to what is called "quantity." It is only necessary to listen for a few moments to a professor reading verse in the old, Latin pronunciation to realize that he has mentally substituted Quality for Quantity throughout the whole of his scanning. In addition, Greek verse possessed a quality which exists to-day in Chinese. Certain words had different meanings according to whether they were spoken with a high or with a low inflectional pitch or glide. It seems possible that such a difference can be glimpsed in one or two English words, notably in the difference between "fur" and "fir," or between the commander of a regiment and the inside of a nut.

But in Greek a confusion between "calm" and a

"weasel" is reported to have occurred in the delivery of a great actor who gave a wrong pitch accent to "Galeen." That this pitch variation was used in the musical notation which accompanied the speaking of the classical Athenian theatre is a tradition which has some appearance of truth. It would have led at the most to a slightly chanting delivery, which, when divorced from its quantitative rhythm, finally led to the use of plain-song in the Greek hymns of the early Church, of which a mention has already been made.¹ How far the rhythm of Greek verse must have been from our English metres is plain, since they had practically no force stress. Here, then, we have an example of isochronous periodicity, marked only by duration and pitch.

The primary difficulty which confronts the poet is that the medium of his art is not free for his individual and unquestioned use; language is already bound, not only like the mediums of other arts, by a long tradition of Aesthetic history, but by the intrusion of alien elements; by the necessities of logical unity, syntactical construction, and, worst of all, idiomatic custom. Sometimes we can imagine an unlettered soul, hearing Titania speak of

The Moon, the Governess of floods,

with a moment's staggering picture of Diana teaching her flock French verbs. The climax of Portia's

Her lord, her Governor, her King

has been spoilt for many a school of earnest examination students by a sudden transition into

Her Gov'nor, her King.

Such confusions are the commonplace of the collector of "howlers." Unlike music, poetry has no "sacred"

¹ Elsie Fogerty: *Speaking of English Verse*, p. 40.

language of sound; unlike painting, she does not use a medium in a style and significance so distant from its ordinary use that we never think of the other possible associations of colour.

Yet above all other arts Poetry has made of this medium, which she holds in common with all other forms of speech, the most complete vehicle of Inspiration, in the amazing significance, exaltation, and beauty she has given to her rhythmic patterns. It is easier to understand this strange art when we remember what we have already worked out; that speech itself is a rhythmic development; that, so far from verse and song being late arrivals, forcing an already established and formal order into a new shape, they are in fact the means by which speech gained coherence, form, and variety. In a sense, Poetry is the flower upon a living stem implicit in the very being and nature of the plant itself, and providing the only means by which the life of the language can be renewed and re-created. Without it language must wither into meaningless matter-of-fact monotony, and lose consciousness of its past and its future possibilities.

Our English heritage of music is not large; we have not the faintest pretension to rival the sculptures of Greece, or the painting of Italy; but in Poetry we hold the record of achievement for continuity and richness of output as well as for variety and perfection in individual form. Laurence Binyon has noted that if it had not been for Shakespeare the world would not have known that a great poetic dramatist could create character. Without his plays he would rank among the greatest lyric writers in the world. Milton triumphed in a form where he cannot admit more than four competitors, and his lyrics alone would have placed him foremost among the world's poets. The unbroken chain of our religious verse from the early hymnals to Francis Thompson and

Bridges are an absolutely unchallenged glory in the spirit of devotion. In the sonnet or love lyric, above all in the ode, four centuries of unbroken inspiration confute all theories of our spirit of self-interest and lack of imagination.

To-day once more their splendours are restored to life in the constant progress of verse speaking where Masefield, Binyon, Drinkwater, Gordon Bottomley, Lascelles Abercrombie, Eliot, Church, Gilbert Murray, Clifford Bax, and Wallace Nichols have taught us what they need, and what they cannot accept, in the speaking of verse. Yeats has given us a theatre, and Eliot's *Murder in the Cathedral* has broken the record of most popular successes in its run of many months. Choric speaking, with its rather dangerous possibilities, is giving us back the possibility of understanding what the Greek drama and Japanese "Noh" plays meant in the days of their religious significance.

There is in this a great force for harmony and rhythmic beauty which the nation cannot afford to neglect. We may achieve again a theatre which will reflect our modern life as the Elizabethan Age reflected the sixteenth century, and as Yeats and Synge re-inspired the national song of Ireland for a few brief years at the Abbey Theatre. If this is achieved the rhythmic teaching of verse must become part of our earliest education.

CHAPTER IX

RHYTHM IN THE CREATIVE ARTS

THE history of crafts and occupational rhythms gradually led us close to the Fine Arts themselves; yet, we are conscious of a distinction. While the former group are an outgrowth from our natural reactions to life, the latter aim at nothing less than a re-creation of life itself.

Not by a fanciful distortion of Truth and Experience, but by that creative imagination which bodies forth a vision of life's significance.

The tendency of all great crafts to develop along more abstract lines, to achieve a more harmonious and less utilitarian expression of beauty, to become indeed an "Art" seems to apply some suggestion of an answer to a riddle which has long perplexed critical minds.

There is a Rhythm purely implicit in the round of common life. Seed-time and harvest, night and day, youth and age form a circle within which man was enclosed for thousands of years.

There is an invisible and abstract Rhythm of which we are conscious only in our own minds in our response to Sound or to Light, or in our delight in physical activity.

To enjoy this ecstasy we must use it for creative ends, often in opposition to the evidence of our senses, almost always in contradiction to the common vision and the material interest of our contemporaries.

There is no room for the expression of this new personal vision till man has solved the major problems of existence; his keenest faculties must have been absorbed in these for ages after the dawn of human life on

the Earth. To-day the genius of the race is absorbed in the innumerable new problems presented to him by Science and by the complexity of industrial existence, rather than by Art or architecture.

The moment when man's release from bondage to nature was accomplished, and when his recorded and comprehended achievements, capacities, and habits had made him for the time master of his world, brought about a release and development of all his faculties, a new and splendid rhythm in his life.

At that period, possibly simultaneously in many lands, creative Art was born.

Two major groups of Arts embody this imaginative re-creation in concrete terms.

The Static Arts of Architecture, Sculpture, and Painting; the Mobile Arts of Drama, Music-Drama, and Ballet.

Music and Poetry each possess an abstract quality which sets them apart from the formal arts, the arts that work with actual material and create things to be seen. The static Arts establish themselves as existing in space independently of their creator or of the beholder; they do not unfold themselves in time.

If one were asked to find a definition for the place of Rhythm in the formal Arts, one might say it is to create a bodily form for imaginative beauty.

The Arts came into being when Man reached a stage where life had attained a certain measure of stability. It had developed within itself, not only the widely scattered and successful crafts and folk arts already discussed, but a stately and ordered condition of existence expressed in ceremonial and pageantry, and, above all, in the mystery and spiritual inspiration of religious ritual. By what development did such an attitude to life become possible? First, by an escape from the mere

circle of existence; the result must have been an emancipation of certain lives from overwhelming toil, a leadership by individuals, and the awakening of a spirit of adventure on the one hand, and of creative imagination on the other.

We see the emergence of united action in the very earliest monuments which can claim architectural quality, for Architecture is the natural background to such national achievement, and is the basic art of the static trinity. Man needs an outlook on some future of calm security, collective or individual, before he begins to build on an architectural scale.

We cannot call the results of aggression and defence in building truly architectural, but War and the Arts of War had an enormous effect in creating the group rhythms of human society. It was, however, in countries comparatively at peace that architecture first attained the status of an Art.

Another source of the power over inanimate things which gave Man confidence and knowledge of construction is found in the art of Navigation; the wonder of a great ship which is built only to move and live in her element, remained until our own day, man's greatest conquest over the forces of Nature. We have lived to see it transcended in the air.

Out of the wild play of winds and watersheds Man has learnt the seamanship of the navigator. Out of the dread of fire and of the vivid cleavage of the lightning, he has drawn warmth and the gradual conquest of the terror of great darkness. Out of his growing understanding of the laws of energy behind them all, he can place himself on an equality with all living things; a height where he need fear nothing but his own passions and disorders, the dangers they bring to him, and the parasites they breed to destroy him.

The first great adventure myth of Europe is the legend of the Argo, and Man's mastery of navigation, from the first drifting log propelled by a rude paddle to the galleons of Spain, is one long story of rhythmic adaptation and of the understanding of rhythmic force.

To share in the flow of the waves, to utilize and define the strength of winds and current, to set a hundred rowers beating the water with an unvarying stroke, to drive their galley out past the pillars of the West—these must have been the first intellectual problems of a mechanical nature which Man was called upon to solve on anything like a large scale. If we attempt to picture the glory of naval construction, the sheer beauty of the thousand different ways in which Man has built ships, and sailed them with the grace of a great bird, we see the singular coherence of his growth in the mastery of Rhythm.

The poet's mind has always been enchained by such pictures, from the first songs of the Hesperides and of the wanderings of Odysseus, to the swift coursing of the great tea-clippers and the stately safety of a modern liner.

One may say without exaggeration that in every detail of this great art of navigation Man has been continuously occupied in solving problems of rhythmic adjustment in force, in time, and in space.

As in the case of warfare, in which indeed the sea has had more than its share, we find the character of Man profoundly modified by the life lived on the sea. How clearly our minds picture the figures of the adventurer, of the sailor, of the explorer, of the pirate, and of the great conquistadors who doubled the area of the habitable world. To-day there is something infinitely appealing and direct in that body of men who occupy their business in great waters, and have so little to tell of the things they have done.

Through all this story runs the force of constructive imagination, and the same force dominates what is generally recognized as the mother of all the Fine Arts, the Art of Architecture.

Behind it lies the development of the Art of Living. First the craft Rhythm associated with his struggle for survival, in hunting, in conflict, in locomotion, in shelter, in food. As their result comes a measure of superabundant wealth. In a fortunate climate there follows leisure and delight in beauty for its own sake. A delight never to be exhausted. Ceremonial and ritual, secular and religious, create the need for great architecture—the palace, the temple, the tomb. Ritual is the greatest stimulus to creative imagination. At once satisfying and stimulating Man's joy in Rhythm, it has always led to ceremonial. Differing from religious ritual in its free glorification of human life, here is unquestionably one of the chief sources of Man's creative development.

In two countries, Crete and Egypt, approximately from 4000 B.C., Architecture almost suddenly rises to importance. Cnossus achieved a perfection in domestic architecture under its Minos rulers, divine kings and priests of the ritual associated with the Bull worship. Not until our own day has the art of living been organized in so perfect a manner architecturally as in that "labyrinth" where Daedalus built a Dancing Floor for "fair-haired Ariadne," and where the Queen's dressing-rooms might rival those of a modern beauty in coolness, privacy, and the efficiency of their washing arrangements.

Why this civilization should have enjoyed so strangely peaceful and aesthetic a calm, it is still difficult to determine, but it stands there to-day, almost undisturbed since the time of its sudden and inexplicable ruin, a witness to the similarity with which Man tries to work out his bodily comfort in living, when he is free to do so.

Grander and more imaginatively inspiring was to be the course of Egyptian art, and for a different reason. The First Empire, governed by a King, who was the chief God of the land, the Pharaoh, shows us the effect of one supreme conception in its Pyramids, its tombs, and the imperishable structure of its early palaces; Man had realized the conception of the soul's immortality, not as yet to be distinguished from the maintenance of bodily integrity by the rites of interment. We see imaginative unity again solving huge problems of construction, in the Pyramids of Gizeh; the largest towering to 450 feet, and formed by a weight of four million tons of stone, brought down from Upper Egypt by the Nile boatmen, and locked into place in its enormous blocks by the labour of a whole slave population.

When the memory of these earlier rulers was removed further than the Dawn of the Christian Era is removed from our own days, the Second Empire came into being, with its more elaborate and extended arts of construction, the growth of decorative sculpture and coloured relief, leading up to wall-painting, and the colossal temples of Luxor and Karnak. Always the greatest monument is the tomb, preserving the whole life of the dead man as a pledge of his immortality. The life these tombs show us must have been among the most rhythmic Man has known; it pictures the multitude of handicrafts, the ordered control of industry, the progression of agriculture, a growing understanding of the problem of the Nile floods, with their successive years of plenty and years of failure, the exquisite decorative dress and ceremonial of a great Court life; above all, the majesty of the stupendous temples still amazes us. It is a civilization based on the river which alone gives safety and escape from famine by its fruitful waters. The burial journey of the dead is pictured in the ceremonial of a procession of

boats to the sacred island where the judgment of Osiris is accomplished, and the soul is weighed in a balance; its future happiness is assured by the richness of ceremonial gifts, by elaborate embalming, by the protective tomb walls, with their amazing decoration. It is an aristocratic and commercial society we see, built upon a huge underworld of slavery.

Here is first the very development of the rhythmic crafts already tabulated in Chapter VI, but this is as nothing to the problems that are solved in the gigantic columns, the shadowed porches and mysterious chambers of the temples, the great avenues of sphinxes, down which pass civil and military processions; the exquisitely designed wall-paintings, the statues hewn out of basalt, carved in wood, decorated with colour and gems; some of these, obeying the rigidity of their material, remain impassively colossal, dwarfing the very existence of Man; others reproduce for us the minutest details of a great lady's costume, the line of her delicately plucked eyebrows, the fit of her ceremonial head-dress over a head shaved like that of the Court Ladies of Richard II.

What exactly is the place of Rhythm in these static arts? First, in the clearest manner, we must distinguish between the technique which created them and the result which remains to us as its record. The technique of the artist is the most rhythmic thing in the world, and in Egypt there is ample evidence that it is self-consciously measured. In all the architectural designs problems of strain and mass and stability are solved, not empirically but obviously by a sufficiency of scientific knowledge; the true object to be achieved in the finished record is however based, not on Rhythm, but on Symmetry, and while it gives the most vivid representational value to the patterns of actions in its wall-paintings, its object is to defeat all time, in the true sense. It aims at the enduring

and endless stability of the thing created. All the arts are still subjected to architectural and decorative necessity. Like the great figures of China, the highest expression achieved is that of "a grave and immobile dignity; we are conscious of a powerful, sober rhythm, in the proportion of lines and masses, suggesting something static and rooted, but yet mingled with a feeling of gentle flow in the lines of the draperies,"¹ a flow repeated in living things, in the decorative design of hands, jewels, and insignia, in the patterns of wave-lines, of lotus, and of papyrus reeds, which form the basis of all the carved columnar decorations of palaces and doorways.

The whole scheme of Art suggests rather that "frozen" intellectual music which Michelangelo claimed as one of the qualities of architectural art. It is distant at more than one remove from realism.

It is partly the accident of material which gives Egyptian sculpture its characteristics. Basalt sculpture lends itself only to completely static expressions of Rhythm; the forms expressed in the Pyramids, the Sphinx, the seated figures of the gods, the broad compositional utilization of the architectural spaces, all show that difficulty has been an inspiration, and the supreme beauty of Egyptian wall-painting lies in the elimination of the accidents and the retention of the essentials of form. It is in a very different world we find the next great development of architectural beauty.

Close to the city of Athens lies the great quarry of Pentellic marble, from which the columns of the Acropolis were carved, each differing slightly in its measurements, so as to give to the temple, which has been mockingly called "a pencil box with a row of pencils round it," its unchallenged supremacy of grace and harmony. The purer Parian marble, from which the statues of Praxiteles

¹ Morris Kestelman : Discussion on these chapters.

were wrought, could be worked to even softer lines, and suggests the very texture of living flesh.

Rule by a single individual had been flung off long before in ancient Athens, when all her boys sang:

I will hide my sword in a myrtle spray
Harmodius and Aristogeiton's way,

in honour of the assassins of her last tyrant. There was no keen impassioned joy in immortality, philosophic doubt was beginning to touch the worship of the old tribal gods, but Athens herself in her maiden goddess, Athene, was the central figure of the nation's life. The great age of her splendour is incredibly short; from Marathon to Arbela is a period of just over one hundred and fifty years,¹ and it covers all of Athenian greatness and decline that we care to remember. It is not the mysterious worship of the divine which forms the background of Athenian life, it is the divinity of Man. We know far more about the relationship of her great art to her national life than we can piece together in the case of Egypt. First, it was the expression of a great vitality, suddenly released from an overwhelming dread of defeat and servitude, that inspired the whole of that art. The Hellenic peoples were the spearpoint of the defence which turned back the menace of Asia this first time, when the very future of Europe's existence was in jeopardy. In thinking of Man's growth in rhythmic perception and power, we must recognize how such a terrific impulse of triumph and desperation must heighten the vigour and quicken the whole tempo of contemporary life. It was not war as we see it, the clash of hideous machines, set in motion by those who hardly knew how to measure their forces, but, like our own Armada victory,

¹ 490-331 B.C.

it was the proving of a young nation, and that impulse, called up in the short unity of the Hellenic States, spent itself in the creation of immortal beauty. We see first the union of architecture and sculpture, for painting lags behind in Athens, and music is still in the humble servitude to which Plato wished to condemn her. The frieze of the Parthenon, its pediments, its metopes, these remain the greatest achievements of Greek sculpture. Yet, witnesses almost contemporary with their full beauty have no leisure to speak of these external things at all. To them the wonder lies in the figure of gold and ivory which occupied its inmost shrine, lighted only by the reflected light which poured in when the bronze doors swung back.

We cannot even imagine the nature of these statues. Athena herself was not to be compared with the Zeus of Olympia. We know that the problems of their construction were so complicated that Pheidias built a lightly-framed studio the exact size of the chamber in which the statue was to stand, set up his perfect image there, and then demolished the building that it might be carried down and set up again in its proper place. In all this we are infinitely closer to the realm of reality than in Egyptian art, and the friezes and pediments at least speak of a definite attempt to call up a sense of time in their complex and culminating composition; but it is an ideal humanity that we see, and behind it is a great story of rhythmic development.¹

I imagine we should agree that any art rhythm and its forms are a means of exciting us into the expression of certain impressions that have stirred us. If the content of our ideas is poor, the greatest resources of rhythm and of technique will give poor results. The matter simply cannot be transformed.²

¹ See Rodin: *Pheidias et Michelange*, Gsell.

² Morris Kestelman: Discussion on these chapters.

All the Athenian youth were subject to the most perfect rhythmic education that the world has ever known. An education in music, in athletics leading up to every form of single combat, in running, above all in dancing, to the rhythm of choric odes, plays, and their accompanying music. A pride and glory in bodily beauty which was the great revelation of the God to his worshippers finds expression in the plastic art of Greek sculpture. Such a combination has never been repeated, and no attempt can ever be made effectively to re-create life in the terms of that particular art. It is not that there has never been magnificent statuary since that time, but its inspiration is totally different; we are here watching the operation of something almost as natural and instinctive as the phenomena which create static forms in Nature out of rhythmic forces. Behind both the Art and the physical development that inspired it is the Greek philosophy of the Ideal. Not perfection but that likeness towards which all things tend when seeking for perfection: the Platonic doctrine of divine archetypes. Such a conception lay behind the whole physical education of the Greek youth; it is more easily attained as a result of such training than in any other way, since Nature herself and the biological forces of development combine to further it. There can have been little to choose between the exquisite lines of a Diadumenos or a Discobulos and their living model in the gymnasium. But the statue was not a mere realistic reproduction; behind the living original and the statue stood the imaginary ideal of a Hermes, an Eros, a Victory, or an Artemis.

What gave to the plastic art of Greece its certainty of execution was that the training in physical perfection of movement, in perfect speech and significant gesture was shared by artist and model, and that its maintenance was a religious duty, and its artistic expression a homage

to the gods. Within the mind and consciousness of the artist were the kinaesthetic memories of the very training which had produced that balance and grace of poise, that absence of effort, that supple skill in sport and in games which created and maintained the physical type. Dances, Games, Sports, and Choric Drama were all an act of worship; statues, pediments, and friezes were consecrated to the gods. When at Olympus the little Thucydides was soundly cuffed by his father for slipping away from the games to hear Herodotus read the last chapter of his history, he was but preferring an exciting novel to a proper performance of his religious duties.

The ideal of Greek culture may be condemned as more intellectual and physical than moral. At least it established once and for all that harmony for which her greatest philosopher prayed to the genius of the grove by the pure waters of the Ilissus.

Beloved Pan, and all you other gods that abide in this place—give me beauty of the inward self; and may the outward and the inward man be at one.¹

It resulted in the establishment of the most essentially human type yet evolved. What underlying conditions of time, of space, and of energy served to build up this tremendous creative period we still only partly realize. As we see them in the dawn of history, these things seem indigenous; they are reflected in an idealized form in the Statuary with its still unsurpassed plastic harmony. The pediments, the friezes, the architecture of the Parthenon, all tell the same story. They show forth the strength of a national inspiration.

The decline of this age is equally suggestive—a war-like ambition for which the Athenian was less fitted physically than the rougher barbaric tribes; the failure

¹ Translated by Clifford Bax in *Socrates*.

in philosophy which allowed the working life of the State to fall into slave hands as wealth increased, and, plainly to read in the great comedies and their Latin translations, the intrusion from below of demagogic vulgarity.

The Athenians did not learn within their own land to educate their masters.

Hopelessly outnumbered and outgeneralled, the Athenian kept his intellectual supremacy in a measure, even in the fossilized splendours of Byzantium, and in A.D. 1453 a sufficiency of hieratical and traditional art remained, as the Greek went down for the last time under the "horde," to serve as seedtime for the Renaissance.

The whole of this great output needs even to-day a unified study. The scholar, the artist, the poet, the archaeologist, the dramatist, have each disentangled the thread which interests them; in doing so they have almost destroyed the effect of the great original pattern.

In considering the origin of the Static and representational arts there is one guide which the Artist himself with his experience of the economic difficulties that beset his profession is not inclined to undervalue.

The early worker in the creative arts was "A Maker," his art was a mystery; his choice of subjects reflects his own capacity as well as the taste of his patron. Subject plays a part altogether disproportionate to modern feeling. To make imperishable the thing he felt of greatest interest and most pleasing to the gods and to his Lord must have been the wish of the men who decorated and designed the glowing wall paintings of ancient Egypt, the wall reliefs and pediments of the Parthenon.

What subjects did they choose? There is a strong contrast in the two.

First, in Egypt, repeated in innumerable scenes, the epic of death. The funeral rites, the judgment, the presentation of the soul before the waiting gods.

Movement, propitiation, realism and symbolism combined, appealing to imperishable calm, motionless dignity, abstract justice unconcerned by human needs.

Then realistic scenes of every human activity, stylized by the Artist to render them suitable for the abstract renewal of the soul's life in its future state, hunting, fishing, building, the bringing of offerings, and everywhere the ritual scenes of reverence to earthly rulers, the triumph over enemies, the numbering of prisoners, the offering of tribute and of fealty.

Such is the Egyptian Artist's witness to the life rhythms which lie behind the convention of his magnificent art. Of work well and ill done popular taste could easily judge. Of "technique" as we now judge and appreciate it there must have been little to say.

It is a long step from this hieratic and symbolic art to the great age of Athens. The distance is bridged by an unbroken line of primitive work, including the evidence of the Vases.

We see there the "Agonistic" character of Greek training; whole series of cups commemorate the victories of boxing, of wrestling, of chariot races. The earlier statues show the same Egyptian contrast of movemented activity and of serene detached contemplation; but the individual has come to his own, we see the study of character and type, no longer merely the mass of humanity conventionally created.

When we come to the Parthenon the story seems clear in every line: round the frieze runs the flow of the great Panathenaic procession, the national fête of the city. It would take a volume to describe its course, the incessant variety of attitude and mood, the men and animals, the

priestesses, the old wise men; all of them reflecting in their composition the splendid groupings of dramatic production which the theatre had already worked out.

It is life frozen into marble, life full of rhythmic order and youthful zest. It surges up to the splendid panels of the gods. Purely human in types and proportions, but abstracted by the very perfection of their human beauty. They typify Power, Wisdom, Love, Perfection of grace.

—They lie beside their nectar, and the clouds are lightly curled Round their golden houses girdled with the gleaming world.¹

In the metopes filling the space between the roof beams, the fight with the centaurs shows the old struggle against a wild and barbarous tribe of riders, one with their north-bred horses.

In the two great pediments we see the crowning myths of Athenian legend: the unmothered Goddess, who is Athens herself, springing from the mind of God alone, full armed and mature; the homage of the sea race to the land dwellers and the choice of plenty, calm and the arts of peace, rather than the wild range of adventure with the riding nomads.

Movement fixed in undying grace, calm and serene detachment as the attributes of the Divine in man, patriotism, the stately conduct of ritual and custom, rooted in the legends and victories of the past. From these grew the splendour of Hellenic art. To these it paid conscious tribute at the hour of its greatest victory.

For the study of the third great static art,—the Art of Painting,—we turn instinctively to Italy.

Although the earliest of her masters were nearly all workers in metal, sculptors, architects, even engineers, and saw nothing strange in so prodigious an output, it is to the firm delicate strength of Italian-Gothic or

¹ Tennyson.

Romanesque Architecture that they owe the essential character of their art; seen in its frescoes, its altar-pieces, the ever varying backgrounds, where all restraints of theological prescription vanish, and we breathe the air of Paradise.

The architectural setting of the fresco, and the tremendous technical difficulties it presented, demanded rigorous purity of line, and a strict discipline in colour.

The exquisite colour of the easel pictures seems only an outward glow from their firm design; above all their sustained intensity of feeling points to an inspiration and a sensitiveness of which the pagan world only dreamed. It leaves us conscious essentially of the soul of the artist, expressed in their concrete forms. Despite the great names of Ghiberti, of Donatello, of Lucca della Robbia, of Verrocchio the maker of the mighty Venetian "Colleoni,"—despite even the final majesty of Michelangelo it is the glory of painting, rather than that of sculpture, that Italy revealed to the world.

The choice is natural. The Latin Church, with the strong Hebraic influences which distinguish half its origin,¹ still looked askance at any breach of the second commandment. Sculpture, too, in its classic survivals glorified "brother Body" too splendidly.

But beside this the new conquest which lay before Painting in its use of perspective made it a stronger rival to Sculpture, and landscape was following perspective into the front rank of the arts.

The subjects which inspire the Artist, that is to say, call out in him his executive force, are the dawning joy of a new hope for the world, and the recovery of antique beauty, from the neglect of centuries.

It is not easy to select a single period of national achievement to illustrate the rhythmic character of

¹ Byzantine Art rejected the use of statuary in churches.

Painting. At first it is joined as completely with Architecture as Sculpture. It is not till the middle of the thirteenth century (1267) that, in the city of Florence, a picture of the Madonna, painted by Cimabue (1240-1302) for the church of Santa Maria Novella, was carried in triumphal procession to its place, and the city renamed the street along which it passed "The Glad."

It is true that the whole history of Italian Art consists of a resurrection of antique art, kept alive in a measure through Byzantine Mosaic and illumination, uniting itself slowly and progressively with Christian mysticism.¹ But here—

The painter finally takes his stand among those who will create with the imagination the poetry of form and of colour.²

During the fourteenth century this early art flowers in a perfection of abstract beauty; during the fifteenth it attains first to something of the universal humanism of Greek Art, then, during the later years, and more especially in Rome, it sinks back to a pagan sensuality which leaves its significance thin and conventional, and, at last, under the fear of religious disintegration, it becomes once more fettered and dogmatic and falls into a decadence.

During all the history of European Art from the beginning of the fifteenth century we see the growth of "National" or racial characteristics developing. One country will find a sudden irresistible impulse to achievement at one time and in one direction, one in another. England, Spain, Holland, France, in turn, dominate the story, as political and social conditions give rise to a rebirth of art or of learning.

It is impossible to follow the track of so many widely different streams of imaginative inspiration. Even the

¹ See Chapter VI.

² Morris Kestelman : Discussions.

City States of Italy embrace too wide a range. Pisa, Venice Milan, Rome, in turn, lead the advance of new modes. But there is one city in which the intellectual and moral flow of life shows so overwhelming a vitality, and where its achievements are of so homogeneous a character, and are bound by such definite limits in time, that, as in the case of Athens, its history will suffice.

From the thirteenth to the beginning of the sixteenth century Florence is the Christian Athens, and in her story some sense of the real significance of Rhythm in Painting and Design may be learnt.

Fortunately no philosophy and no scientific system of genetics has ever found a reasonable explanation of the incidence of individual genius. There are moments in the story of the world when the appearance of a certain group of "organizers," working under economic or political and racial conditions favourable to spiritual and imaginative freedom, seems to release the creative ardour of a whole people.

Twice in her history Tuscany played such a part. The Etruscans, who came to the Italian forests from some home among the dark-skinned people of Asia Minor, bringing with them their lovely skill in pottery, taught art and folk drama to the barbarous Latins. Their fleet destroyed by the Greeks and their cities destroyed by Rome, they found themselves on the high road from Italy to Provence, and to them and to their Neapolitan allies came the first flowering of the Italian Renaissance, after religious persecution had destroyed its vernal prelude in Southern France.

Florence and the Sienese won the fight for freedom of Artistic representation against the Church.

We are those who show forth by the Grace of God to homely and unlettered men the marvellous things wrought by and in the power of the holy Faith.

This was the proud claim of the statutes of the Corporation of the Sienese painters.¹

Two names stand at the threshold of this great flowering time of Tuscan Art:

St. Francis of Assisi, 1182-1226

Dante Alighieri, 1265-1321.

In 1276 was born the inspired artist who was to enshrine the memory of the Saint at Assisi, and to wander with the exiled Dante through the lovely cities of Italy: Ravenna, Pisa, Verona; each among them, with Siena, Milan, Venice, and Bologna, creating a detached and individual school of art.

Giotto, the little shepherd lad whom Cimabue found drawing his sheep on a smooth stone, never lost his passionate love for Nature and his understanding of her moods. Like the men of his day, he was architect, painter, and sculptor in one, and to him fell the task of continuing in St. Francis' Church of Assisi Cimabue's work, and breaking away from the formal Byzantine style to triumph in the sincerity of emotional simplicity over convention and triviality.

The joy of these first years of recovered faith and radiant devotion is reflected in his gay, glowing composition; he worked for forty years, and at St. Peter's and the Lateran in Rome, at the Podesta in Florence, he gained the skill which inspired his design for the Campanile at Florence, dying in 1337 before the work was really begun, though he saw the first stones laid.

In the twenty-eight great frescoes at Assisi, now barely visible, he identified himself with the pure tenderness and spiritual beauty of the saint, and, drawing his inspiration from direct observation of contemporary life,

¹ Camille de Mauclair: *Florence* (translation by Cicely Binyon).

he broke down once for all the resistance of the Church to the freedom of the artist.

In Naples, summoned by the Angevin King Robert of Sicily, he made the great frescoes that recall the tragic personality of Joanna, later Queen of Naples and Countess of Papal Avignon.

As the influence of Bach was universally supreme for a hundred years, so did the genius of Giotto provoke a wave of naturalistic idealism and fling it, a sparkle with life, on all the sacred walls of Italy.¹

What are the real achievements of these early primitives? In a word, they pushed back the wall on which their frescoes were composed and made painting three dimensional.

We no longer look *at* their pictures, we look into a world they create for us. A three-dimensional world which henceforth can solve every problem of spatial representation. Giotto is never preoccupied with "problems," the elaborate "perspectives" which absorb the attention of later masters do not trouble or perplex him. Only they are visible to the trained vision of the artist and what he sees his hand can set down so that it becomes visible to us.

This close analogy to the musician's art must arrest attention. The one trains his ear so to recognize the progression of musical sound that his hands interpret it in tunes of time or force or melody.

The artist trains his eye to a vision which comprises line, colour, composition, planes, and depths of space. His hand fixes them into perfectly instantaneous reality so that the vision shown in the picture is true at every point to the instantaneous impression of the whole subject as he saw it, and held it in his imagination.

¹ Mauclair, *op. cit.*

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¹ Mauclair, *op. cit.*

Design and colour only exist for him to make visible the profound experience, spiritual and emotional, which he is re-creating.

The history of the development of the medium of painting during the brief period which includes the work of Giotto, 1276-1337; Fra Angelico, 1387-1455; Botticelli, 1444-1510; and Leonardo da Vinci, 1452-1519, covers the change from fresco to tempera painting on wood, from tempera to oil, about 1400. It includes the perfecting of perspective, the great use of paper for sketching, as in Leonardo's series of red chalk designs and drawings; finally the first tentative use of canvas.

The art of perspective has grown to its full development. It has called in the aid of mathematics to judge angles and lines correctly, but the perfecting of the medium and the range of technical development seem only to reveal more clearly the secret of great art: the artist's power to make these things live. Rhythm is the secret of this vital expressive force, but each medium has its own conditions, and in the pictorial arts the instantaneous whole must present itself as the final result of the artist's unsparing labour and the vividness of his creative imagination.

Fra Pandolf's hands worked busily a day
And there she stands.¹

The very spirit of the Franciscan vision of joy and life in believing is in those exquisite frescoes and Adorations of Fra Giovanni "Angelico," and in his decoration of the Monastery of San Marco.² Angels, Patriarchs, Saints, and Martyrs surround and glorify their Lord against

¹ Robert Browning: *My Last Duchess*.

² Fra Angelico's name is Fra Giovanni. Angelico is a name given to him because of the character of his painting.

his golden backgrounds. The reality of Milton's Paradise glows in his pictures:

There entertain him all the Saints above
In solemn troops and sweet societies
That sing and singing in their glory move
And wipe the tears for ever from his eyes.¹

In that Monastery Savonarola knew a brief respite of peace. Sandro Botticelli, won from the vanities of the world by his burning fervour, laid aside the vision of Venus for that of the pure Grace of Our Blessed Lady. But the ladies of his Primavera still dance among the angels that come to sing the meek triumph of the Nativity. His celestial colour has all the emotional quality of Music.²

The Martyrdom of the great Dominican, his message stifled in the flames on that terrible May 23, 1498, gave to the last of the Christian Prophets the fate of his Hebrew forerunner, and San Marco's beauty of holiness was at an end, while Roderigo Borgia reigned as Alexander the VI.

In the study of musical rhythms it became clear that the element of melody was one of the most vital factors in its appeal. The simplest delight of Music grows through the Modes, the scale, the key variations which establish the contrast and continuity of sounds in melody. They lead on to counterpoint and harmony. Here lies the secret of the emotional appeal of Music. Considered as pure rhythm, the scale is the basis of "fingering," and so of the temporal and accentual marking of the phrase.

In painting the dominant factor is that other scale: the rainbow scale of Colour. It is based on the Spectrum's sevenfold order from red to violet.

¹ Milton: *Lycidas*.

² Botticelli: *Nativity*, National Gallery, 1034.

Here we touch on the mystery that lies behind Aesthetic perception in the Arts. The adjustments and combinations of these vibrations of Sound and Light, striking on the Ear and on the Eye, give us, by the response of our senses, pleasure transcending all other physical impressions.

First to the Musician or the Artist they bring that creative response whereby the whole world becomes significant to him. Then, to those who listen and see, that perfect delight which leaves us unconscious of any reality but Beauty.

It is not the meaningless concatenation of these things, not even the reality behind their re-created order; it is the rhythmic pattern of the maker's imagination which achieves a new delight, creative or interpretative, and fills us with the sense that a new heaven and a new earth have been opened to us.

Here is the true mystery of Art, of Music, of Poetry, of Drama, and of the Dance.

What is its explanation?

At the moment of revelation we have no doubt of the answer. It is that we have been in touch with the essential Creative Force of the Universe.

One almost legendary figure stands out in the supreme years of Florentine greatness: Leonardo da Vinci leaves no vision of a Church triumphant; his intelligence, perhaps the widest of any known to the human race, grapples with all the problems that still perplex our minds.

Critic, architect, painter, designer of military defences, politician, and philosopher, he goes back to the days of Daedalus to attempt a solution of the problem of flight on modern lines. His artillery excels all devised before it in deadly precision. One thing almost absorbs his artistic genius: the problem of motion, studied in waves,

or clouds, or air; the flow of water, the flight of birds, the variety of human action.¹

What he sees lives under his pencil, in his innumerable designs and sketches, even more than in his surviving masterpieces. His rhythmic sense and power of expression is perhaps the keenest ever possessed by any painter.

Writing before the existence of Music as we know it and in an age when Universal beauty was being expressed by Italian painting (1452-1520), he claims the art of painting as the supreme expression of human genius.

The artist's kinaesthetic perception has obviously developed to an incredible extent from the earliest times. In the creation of a carving or of a "bas-relief" touch could directly measure the spatial planes involved in composition.

The kinaesthetic reflex was therefore extraordinarily direct. It could be tested in proportion, if not in actual depth and elevation. Perhaps this is why Leonardo regarded Painting as an infinitely more intellectual art than Sculpture.

In painting the kinaesthetic graph of design was much more complex. It included what is known as "perspective," the expression in painting of the whole visual depth of the field of the picture, a problem best solved by simple reliance on stereoscopic vision; the attempts at scientific perspective have practically been abandoned as the results differ too far from current visual impressions. But among the kinaesthetic impressions called up by the view of any object are impressions of weight, cubic form, density, texture, light reflection, light refraction, pure and modified colour and motion; all these impressions are recorded, through kinaesthetic memory, in the touch of the painter's pencil, in the

¹ See Chapter VI, p. 113. *

disposition and choice of his pigments, and in the subconscious knowledge he has acquired of the nature of the anatomical and mathematical problems which underlie their reality: Leonardo's unceasing preoccupation.

Only when all this knowledge remains sufficiently subconscious to permit mental concentration on feeling, on the thing to be expressed, is the artist inspired. So long as any inexpertness keeps him fumbling for the touch he wants, he will be fortunate if it does not reduce him to a mere copyist of nature, and destroy his inspiration.

We see on the other hand that if his concentration on the creation of a perfect conditioned reflex deprives him of opportunities for mental experience and emotional life, or if it forces him into too strict a herd limitation of all his instincts, if he becomes "arty," then the mentality which should dominate his creative imagination is impoverished and the universal appeal of his genius is restricted. It is one of those everlasting antinomies which explain the rarity of creative excellence.

The ideal conditions of fifteenth-century Florence return but too rarely on earth.

In Heaven perhaps new chances one more chance—
Four great walls in the New Jerusalem,
Meted on each side by the angel's reed . . . ?¹

Where the lost frescoes might at last burn out immortally.

Is it possible to deny that the nature of the kinaesthetic action involved in the "making" of a picture carries with it, for the trained artist, every memory which is essential to the realization of his creative idea? So much so that he is completely unconscious of the disappearance in the finished design of one element present in dancing, in music, in poetry, and in drama, the temporal element of

¹ Robert Browning: *Andrea del Sarto*.

succession in Rhythm. To him, the final record of his activities and impressions, the painted picture, summing up all that he has known and thought and felt in painting it, becomes one instantaneous impression. How different from a mechanically instantaneous record no one knew, till photography showed us the falsity of snapshots, side by side with their invaluable teaching in those movements which were so rapid that they escaped the memory of human vision: it is therefore clear that the arts of painting, sculpture, and design in their finished execution reject the element of time, and stress in this exclusion the symmetrical and spatial elements which, it has been suggested throughout, are in themselves the result of rhythmic action.

It is plain that this absence of temporal element is of the very essence of static art, of its greatness, and of its limitation, of its freedom to select and combine, and of the specially creative character which results from the placing of the whole executive mastery in the artist's own hands. It also explains the genesis of "impressionism"; the fault of the composition studio picture is a difficulty of reconciling all that the artist remembers and thinks about his subject, with the vividness and truth of his first impression.

In M. Gsell's summary of Rodin's philosophy of art,¹ a somewhat different view is very ably maintained; describing the artist's desire to express life in all its aspects as completely as a poet or a dramatist can express it, he claims that there is a Time element in representational Art, and that in formal group painting the succession of action is often shown. He cites first early histories of the saints where continuous action is represented in different parts of the picture. Then he instances Watteaux's *Embarcation à Cythère*, a picture inspired

¹ Rodin: *L'Art*, by Paul Gsell.

by one of the great Court masques of the day, and shows how, beginning at the right of the picture and ending in the left distance, the figures show the successive stages of the action. The lovers hesitating; moving slowly on their way; drawn along by the Goddess's enchantment, and finally sailing off into the distance.

He also establishes a clear distinction between the mechanical arrest of an unfinished action in a snapshot and the composed action of the artist where one part of the body completes a movement which the other has only initiated, claiming that this satisfies the eye far better than the instantaneous record. One instance is the convention of showing the hind and front legs of a galloping horse, both extended instead of bunched together with an effect of powerlessness, as in a quick exposure. It is true that no instantaneous picture of a figure walking ever suggests anything but arrested and clumsy pose, while Rodin's own *St. John Baptist*, the feet still planted while the body begins to swing forward, does give the sense of action. Two slightly successive stages of the same action, overcoming the rigid arrest of the camera, is his conception of "movement" in plastic art.

One passage from Leonardo's voluminous notebooks, that on the *Flight of Birds*, illustrates the meticulous study he gave to this question of rapid movement.

The imperceptible fluttering of the wings without any actual strokes keeps the bird poised and motionless amid the moving air.

The reverse movement against the direction of the wind will always be greater than the advancing movement; and the reverse movement when made with the course of the wind will be increased by the wind, and will become equal to the advancing movement.

The ways in which birds rise, without beating their wings, but by circles, with the help of the wind, are of two kinds,—simple

and complex. The simple comprise those in which, in their advancing movement, they travel above the flight of the wind, and at the end of it turn and face the direction of the wind, receiving its buffeting from beneath, and so finish the reverse movement against the wind.

The complex movement by which birds rise is also circular, and consists of an advancing and reverse movement against the direction of the wind in a course which takes the form of a half-circle, and of an advancing and reverse movement which follows the course of the wind.

The simple circular movement of rising without beating the wings will always occur when there is great agitation of the winds, and this being the case, it follows that the bird in so rising is also carried a considerable distance by the force of the wind. And the complex movement will be found to occur when there are light winds, for experience shows that in these complex movements the bird rises through the air without being carried too far by the wind in the direction in which it is travelling.

The down and feathers underneath the wings are plentiful, and at the ends of the wings and tail the tips of the feathers are flexible or capable of being bent, whilst those on the front of the wing, where it strikes the air, are firm. . . .

We have therefore proved that when a bird has its wings spread out and its head somewhat raised, it is impossible for it ever to fall or descend in a perpendicular line; on the contrary it will always descend by a slanting line, and every tiny movement of wings or tail changes the direction and slanting descent of this line to the reflex movement.¹

The Chinese painter in the long scroll (see Frontispiece) had just such a vision in his mind. We see first the rise of the geese from their nesting-place, then as we unroll the scroll the long gaggle stretched over the sky, ending in the downward turn of the group that forms the subject of the illustration. The top right-hand bird is still in line with the whole following flight, only his head has turned;

¹ See Kenneth Clark, *Leonardo da Vinci*.*

the next above on the right has lowered one wing and is breaking back on his course, while the lower bird has completed his turn and is already diving down to the feeding ground, where the splashing, gobbling confusion of the scroll depicts the end of the story.

CHAPTER X

THE MOBILE ARTS

IN this final section we see, for the first time, forms of expression which include every element in rhythmic order. Music gives perfect temporal expression to Rhythm; with force to mark its periodicity. Space is present only in the implications of Pitch, and may not be clearly realized by the composer, though the executant cannot ignore its place in all technical accomplishment.

Poetry employs every resource of force and articulatory movement in isochronous periodicity; at times building its whole form on the durational values of vowels. But space again is implicit rather than expressed in spoken rhythms.

Painting completely excludes the idea of time from her final achievement, though every stroke of the artist's hand implies its presence.

The Mobile Arts are three-dimensional. They move and create in Space; their rhythms pass before our eyes in Time; the pattern they establish is created in succession, and rounded off only in the passage of time necessary for the performance of a whole action, in play, music-drama, or ballet. Climax and force are the strongest element in their construction.

To this they owe the instant and often overwhelming success they achieve; their universality of appeal.

Because of this, they perpetually run the danger of degenerating into blatant sensationalism; a danger they perhaps seldom altogether escape.

The line between acting, for instance, and the "Fine" Arts is clean drawn by the enormous specific technique required in a Musician, a Painter, or an Architect. The Actor can easily delude himself, and it seems even at

times his friends, into believing that a personal desire for self-expression, or financial independence, is sufficient justification for appearing before some public gathering, without anything that can be dignified by the name of training; and the public is often quite incapable of distinguishing between acting and behaviour, and frankly prefers the latter when the difference is made clear.

In the vast and confused history of the Theatre there have been times when audience and players have shared the stage together; times when the Actors made up the plays, and accepted suggestions from the audience for their improvement. There have been more spacious days when the Theatre was a temple and its Actors priests.

The course of this inquiry follows the question of the rhythmic character of both the Drama and its interpreters. The newest of all Art-forms, Music-Drama, is in a sense only a return to Greek ideals, but its deliberate object is to combine all rhythms, visual and auditory, spatial and temporal, into one overwhelming imaginative whole, transcending all human experience by the intensity of its appeal. It has at least revolutionized the character of musical composition.

Ballet, the third art to be considered, has an age-long history, going back to the art of the Greek and Latin "mimes." It is completely international in its appeal, and its influence on modern musical rhythms has been remarkable.

From the time of Aristotle the "Unities" of Drama have been distinguished as the three principles of Time, Place, and Action. A truly rhythmic classification, even though it was rather vaguely based on the practice of great poets in a previous century. The first idea was that the action narrated in the play should be of exactly the same length as the time employed in its performance. Such a unity was possibly carried out at times in the

shorter plays of a Greek trilogy, for instance in *The Seven against Thebes* of Aeschylus. But it is by no means universal, and has hardly ever been observed in the later history of the Drama; the *Tempest* alone of Shakespeare's plays observes it even approximately.

Finally it was generally considered well to restrict the action to a period of twenty-four hours.

No clear advantage can be discovered in such a rule. *Romeo and Juliet*, for instance, one of the most perfectly knit of Shakespeare's plays, occupied an acting period of two hours assigned to it in the prologue; it seems a rather impossible time, even without any pauses. The action of the play begins on Sunday morning and ends at dawn on the following Thursday. There are careful time notes all through, but the action is smoothly continuous.

The unity of place has always been a matter of acting convenience. It is constantly observed to-day for mere reasons of economy. The conventional spacing of the Shakespearean stage—a kind of multiple setting—lent itself to quite violent change of place with no injury to Dramatic illusion.

The fall of the curtain renders both these unities of doubtful value.

They tend to make character development too static.

Unity of action to the Greeks meant the carrying through of one overmastering interest, from its first opening prologue, through its full development and the choric response, to a climax of tragic action, a catastrophe, some scene of solution, at times, of reconciliation with divine justice, and an exit ode concluding the story of the action.¹ At one point the interest was often quickened by a "Reversal," the judgment on some rash and wicked deed. Not the misfortune and overthrow of

¹ See Aristotle's *Poetics*. Translators, Butcher and Lang.

goodness, nor the mere punishment of evil, but the working out of a just fate on foolish self-sufficiency.

To change the character of a play from comedy to farce, or from tragedy to melodrama, is to destroy the illusion established in the mind of the audience; though Euripides often resorted to the "God out of the Machine" to wind up his plots, the introduction of a new character of importance will almost always wreck the close of a play.

With the realistic development of modern Drama, and the influence of film technique, the interest in characterization and its presentation through dialogue alone has become the main interest in our plays.

The most perfect of all Drama from the point of view of Form is the Greek. It shares in that brief age of Aesthetic perfection already described. The influence of Plastic grouping is obviously strong in it.

There was perfect unity between the appeal to the eye and the appeal to the ear.

It first created an ideal stage.

The stage must be visible at every point to the audience. Its "Sight-line" must suggest a naturally enhanced perspective. It must be built so as to give the actor an opportunity of working in clearly defined planes, rising one above the other. It must act as a natural sounding-board to the voice. It must never cramp the actor, or dwarf him by its immensity. He must be able to stand or sit without losing touch with his audience. He must have a definite variety of entrances and exits.

The Greek theatre solved the problems of sight and sound simultaneously, by raising the seats of the audience against a high natural background. It needed no high-raised stage. The small group of central figures, never more than three, were concentrated in full view of the audience. Chorus and messengers entered on a lower

plane, and were visible a long way off as they came. The roof of the stage could be used for a watchman, a "god out of the machine," or a great final demonstration, like the flight of Medea.

The long and complex training of the chorus under a professional dancer, more akin to our idea of a "mime," included choric speech, miming movement, lyric verse delivery, antiphonal exchanges with the actors, and, as we see in *The Seven against Thebes*, completely realistic action.

Music accompanied certain choruses and sustained certain speakers. The audience listened and watched far more as we watch and listen at the opera. Measuring the correct time and pitch of words, following the patterns of choric action, which served to make clear the extraordinarily complex metric structure underlying the verse rhythms, by a series of antiphonal movements.

The actors were built up to a required stature. They wore masks; the chorus wore them in comedy, but seemingly not usually in tragedy. Certain choruses were formal dances. At times, as in the *Antigone*, Dionysiac, but at times characteristic of the ritual proper to the particular divinity whose personality dominated the play; Apollo, for instance, in Sophocles' *Electra*.

We cannot re-create the sound of the delivery of quantitative verse, enriched by fixed pitch inflections on the tonic accents, but what has been said of the delivery of French verse-rhythm probably comes fairly near to it. "Chaunting" would have destroyed both the variety of the quantitative pattern and the freedom of the pitch accents.¹

It is assuming too much to argue from ritual use, which did not come into being till six hundred years after the great age of Greek Drama a use, also which depended for its rhythmic pattern on the fact that speakers had ceased to take note of the length or shortness

¹ Chapter VIII, pp. 160, 166-67.

of vowel sounds, and had therefore to a certain extent fallen back on a system of isochronous stresses.¹

As in the "Noh" play of Japan, there were definite levels of speech. For example, a prologue in dramatic hexameter, spoken by a messenger or by the chief actor, opened the play. Sometimes this took the form of a dialogue. In Euripides it is spoken by the gods concerned in the action.

The entrance-ode of the chorus brings them in to the orchestra or circle of the theatre's central floor. They enter in two groups, and the ode they speak is timed, as can easily be tested at Epidaurus and elsewhere, so as to bring both divisions to their stations before the stage of the speakers at the end of the second strophe.

Here they follow the action, and at times take a ritual part in it. They carry on rapid antiphonal exchanges with the actor and work out with him those elaborate scenes of lament or dramatic climax which are called "Kommoi," and which, accompanied by flutes and harps, formed the most dramatic moments of the action.

Those who heard Mounet-Sully play the Oedipus Rex, or Got, in *Les Burgraves*, declaim the great monologue of the return of Barbarossa, will realize a little of what this "orchestral" type of speaking could produce in the way of sheer dramatic excitement. The Greek theatre was not a gently academic or "classic" entertainment. It was a passionate and original interpretation of religious and political legend, sacred in its formalism, but as melodramatic as an Elizabethan tragedy in its plot. What gave it sublimity was the strict rhythmic form of its construction and the exquisite rhythmic character of its performance.

The attempts made to find means of producing these tragedies as living plays in Gilbert Murray's lyric

¹ See Chapter VIII, p. 167, on Plain-song.

translations have re-created the art of choric speaking among us, and proved it to be a natural and effortless form of delivery for trained speakers.

The movements obviously needed to harmonize with such speech have brought about the revival of certain forms of Greek dancing.

Two things have become clear in the process: the recovery of a new form of delight in speaking verse, and the physical value of a study of classic action and flexibility.

Unfortunately the profound and critical study needed to obtain any result worthy of the name of dramatic interpretation is seldom realized; more dreadful things are done in the name of both revivals than can be imagined by those who have not actually seen them.

The great tragedies are hardly suited to amateur production, but when artists like Sybil Thorndike, Lillah McCarthy, and Lewis Casson have produced them, we have heard and seen a vision of lyric beauty.

The films may make realistic acting impossible on the stage, and we may have to turn to our poets to create for us, as Masfield, Eliot, Drinkwater, Gordon Bottomley, and Clifford Bax have already done, a new world of poetic drama.

The two questions which are, however, of paramount importance in the theatre to-day are these:

What is the real basis of dramatic action?

By what means is the relation between audience and actors established and maintained during the performance?

The Rhythm of the whole performance depends on the answer given at different times to these two questions.

Two answers may be suggested:

Dramatic action is in the nature of a conflict between circumstance and character.

The relationship of performers and audience is in the nature of an illusion, willingly maintained by both, but never attaining to complete deception on either side.

All the greatest dramatists of the past have themselves been either actors or closely connected with the stage.

The one exception is the foremost of living dramatists, Bernard Shaw. But in him we have obviously an instance of inescapable vocation. The actor dramatists had instinctive knowledge of the exact moment at which the audience would accept or refuse their co-operation to the success of the play. They thought in terms of Acting-time and of Stage-space. They could instinctively feel the strength and timing of the words they spoke. They knew how to avoid the dangers of sameness and of too violent variety. They understood the business of illusion, but they were rather inclined either to leave the work of character drawing to the actor, or to make all characters conform to the needs of the troupe, giving the right "business" to each appropriate player as Molière and Sheridan do, and as Shakespeare indeed does almost without letting us be aware of it.

Greek Drama made clear the true nature of this Rhythm of conflict. Conflict between Character and Circumstance.

In their tragedies Circumstance towers gigantic as "Fate."

The Gods have long forgot us. And we twain
Have no gift left to make them laugh again
Except our death. Why fawn upon the Fates
And cringe to avoid the end that surely waits?¹

Seven against Thebes

In comedy all this is reversed. The foolish sly things overcome the strong and wise. A slave's jest, or perhaps

¹ *The Seven against Thebes*. Translated by Gilbert Murray.

a spell to avert evil and the danger of "Hubris," the sin of self-sufficiency and foolish boasting.

In Elizabethan tragedy, Character is fate. Fate has shrunk to an accidental disaster. "The little thing behind the door."

The fault, dear Brutus, is not in our Stars
But in ourselves that we are underlings.

The supreme beauty of English blank verse is found perhaps in those incredible declamations of Marlowe's heroes when the one fatal weakness of mad and extravagant desire overwhelms them.

Desire for power in Tamburlaine. Desire for knowledge and the power it gives in Faustus. Desire for wealth and the power it gives in the Jew of Malta.

Ah, fair Zenocrate!—divine Zenocrate!—
Fair is too foul an epithet for thee,
That in thy passion for thy country's love,
And fear to see thy kingly father's harm,
With hair dishevelled wip'st at thy watery cheeks;
And like to Flora in her morning pride,
Shaking her silver tresses in the air,
Rain'st on the earth resolved pearl in showers,
And sprinklest sapphires on thy shining face,
Where Beauty, mother to the Muses, sits
And comments volumes with her ivory pen,
Taking instructions from thy flowing eyes;
There angels in their crystal armours fight
A doubtful battle with my tempted thoughts
For Egypt's freedom, and the Soldan's life;
His life that so consumes Zenocrate,
Whose sorrows lay more siege unto my soul,
Then all my army to Damascus' walls:
And neither Persia's sovereign, nor the Turk
Troubled my senses with conceit of foil
So much by much as doth Zenocrate. •

What is beauty, saith my sufferings, then?
 If all the pens that ever poets held
 Had fed the feeling of their masters' thoughts,
 And every sweetness that inspired their hearts,
 Their minds, and muses on admired themes;
 If all the heavenly quintessence they still
 From their immortal flowers of poesy,
 Wherein, as in a mirror, we perceive
 The highest reaches of a human wit;
 If these had made one poem's period,
 And all combined in beauty's worthiness,
 Yet should there hover in their restless heads
 One thought, one grace, one wonder, at the least,
 Which into words no virtue can digest.

The one fault is that the lines might have been spoken by anyone of the stock heroes of melodramatic tragedy.

Binyon has pointed out that but for Shakespeare we might never have known that heroic verse could express character.

Set beside this sublime bombast, which Shakespeare could mimic well enough when he wished, the first meeting of Hamlet and the returned Horatio.

HOR. Hail to your lordship!

HAM. I am glad to see you well:

Horatio,—or I do forget myself.

HOR. The same, my lord, and your poor servant ever.

HAM. Sir, my good friend, I'll change that name with you:

And what make you from Wittenberg, Horatio?

Marcellus?

MAR. My good lord?

HAM. I am very glad to see you. (*To BER.*) Good even, sir.

But what, in faith, make you from Wittenberg?

HOR. A truant disposition, good my lord.

HAM. I would not hear your enemy say so,

Nor shall you do my ear that violence,

To make it truster of your own report
 Against yourself: I know you are no truant.
 But what is your affair in Elsinore?

(Trumpets and shots off.)

We'll teach you to drink deep ere you depart.

HOR. My lord, I came to see your father's funeral.

HAM. I pray thee, do not mock me, fellow-student;

I think it was to see my mother's wedding.

HOR. Indeed, my lord, it follow'd hard upon.

HAM. Thrift, thrift! Horatio! the funeral baked-meats

Did coldly furnish forth the marriage tables.

Would I had met my dearest foe in heaven

Or ever I had seen that day, Horatio!

My father!—methinks I see my father.

HOR. O where, my lord?

HAM. In my mind's eye, Horatio.

HOR. I saw him once; he was a goodly king.

HAM. He was a man, take him for all in all,

I shall not look upon his like again.

HOR. My lord; I think I saw him yesternight.

HAM. Saw? who?

HOR. My lord, the king your father.

HAM. The king my father!

HOR. Season your admiration for a while

With an attent ear, till I may deliver,

Upon the witness of these gentlemen,

This marvel to you.

HAM. For God's love, let me hear.

The rhythm of the lines is perfect, the very metre is exact, but the dialogue is life itself.

The half-abstracted opening of the Prince, arrested by a warmth of greeting not usual in his fallen fortunes. Then the eager cry of boyish welcome, the loyal friend's unswerving word of service; the gracious princely welcome not to his friend alone but to the young officer whom he knows, and to the guard whose name as a

private soldier he does not recall. He has cause to suspect those who throng to Claudius' ill-ordered court. We get the repeated question as to Horatio's business in Elsinore, turned off with a jest, but at last answered directly and plainly:

I came to see your father's funeral.

Horatio's reply to Hamlet's bitter jest leaves no doubt of his understanding of Hamlet's sorest grief, his mother's faithlessness. Almost unendurable irony and contempt are followed by one line which builds a foundation for the scene in Claudius's oratory where we most nearly lose our sympathy for the Prince.

Would I had met my dearest foe in heaven
Or ever I had seen that day, Horatio!

That is his darkest vision of defeat.
There is a touch of hysteria in the cry:

My father!—methinks I see my father.

For an instant Horatio's perfect understanding fails. His mind is full of the vision of the dead king, and he too cries out a startled—

O where, my lord?

In my mind's eye, Horatio,
is Hamlet's rather weary rebuke.

Horatio cannot delay his revelation longer, but will the Prince believe him? One figure in armour is like enough to another.

HOR. I saw him once; he was a goodly king.

HAM. He was a man.

The flash is almost too rapid for words.
Then the gentle deliberate statement:

My lord, I think I saw him yesternight.

The exact rhythm wrings the last shred of meaning from the words:

Saw? who?

My lord, the king your father.

The king my father!

Season your admiration for a while
With an attent ear. . . .

The sharp cut and thrust of the questions, Horatio's careful, unemotional, exact record of what he saw; his refusal to accept the other men's estimate of a longer time in which to study the spirit's form. The simplicity of his—

I knew your father: These hands are not more like.

One would give many of the more splendid lyric outbursts for such scenes as these, comedy scenes sometimes with their light delicately quick rhythm; scenes between two women; most incredible of all, since they catch the exact feminine tone of the dialogue when women talk alone, as when the girls dress Hero for her ill-fated wedding, and we hear how Beatrice has a bad cold and did not sleep with her cousin on that fatal night.

Sometimes it is the change of tone when a new character enters which shows the absolute mastery of rhythmic characterization, as when Orlando rushes on with his carefully prepared line of blank verse—

Good-day and happiness, dear Rosalind.

And the lady, after elaborately seeing off Jaques, and taking no notice whatever of her suitor for at least a minute and a half, suddenly turns on him with the completely matrimonial gambit:

Why how now, Orlando, where have you been all this while?

Alone among dramatists and poets, Shakespeare perfectly blends prose and verse, finding in each the exact diction of words and of utterance which his actors could not fail to follow and interpret.

Compare the two stories of Laertes and of Hamlet, each mourning a father dead; a dearly-loved woman broken and tarnished. Set side by side Hamlet's hesitancy; Laertes' almost triumphant rebellion; Hamlet's excuse for his blunted purpose, in not killing Claudius at his prayers, and Laertes' flash of fury.

KING. Hamlet comes back: what would you undertake
To show yourself your father's son in deed. . . .

LAER. To cut his throat i' the church.

KING. No place indeed should murder sanctuarize.

Compare again the diction of Hotspur in his rhapsody on honour and Falstaff's "Catechism," and see the portly rogue bear off the dead hero at the last.

This mastery of rhythmic words is the one unequalled thing in the whole history of the Theatre. It would alone suffice to justify the need of a National Theatre to maintain the perfection of its simple and unstudied delivery.

To consider now the rhythmic link between actor and audience, the nature of the "make-believe" which creates Dramatic Illusion.

Looked at more closely, the illusion proves to be a dual experience. One part is built up by the actor in his imagination; in the play that he wrote as a plan for his action before the dramatist and the player divided their functions. Once the action is determined, it must be practised till it achieves the illusion of truth for the actor, the illusion, that is to say, of unconscious rhythmic performance by a group united in time and space. Time, force, and space, measured so that the audience in turn

experiences an illusion to which it willingly consents. A prose dance, based on significance.

When we watch a conjuror, we do our best to find him out. We try not to listen to his patter, and to fix our eyes on every movement so that we can say presently, "I think I saw how he did that." He, on his part, does his utmost to cheat us, to concentrate our attention on what is meaningless, so that we may miss all that is significant. The actor has need of no such arts. It is our imagination that seconds him and willingly submits to the force of *his* imagination in realizing and performing his part.

If we believed for a moment that the action taking place on the stage was real, we should behave as the children do in *Peter Pan* when they cry out: "Yes, yes, we do believe in fairies," to save Tinkerbell's life. If we really believed in Macbeth's malignant intention, should we not slip quietly from our stall and invite the medalled veteran at the front doors to whistle for the police?

In one instance the experience of such a complete sense of illusion, given by a performance of the last Act of Marlowe's *Edward II*, proved so harrowing, that, on the second night, the auditor walked out into the foyer and sat there till the scene was over rather than endure it a second time. Most of us feel that it is impossible to bear the blinding of Gloucester in *King Lear* because the realism of it is too overwhelming if it is well acted, and too grotesquely comical if it is badly done. We consent, then, to the "Mimesis" of the actor if it gives us pleasure and a sense of reality.

What place does scenery, the illusion of space, play in this illusion? Obviously a very different one for the audience and for the player. What helps the one may possibly hinder the other. Obviously, too, a very different part in tragedy and in comedy. Yeats, in his introduction

to *Plays for an Irish Theatre*, has given us a wonderful analysis of his idea of scenic representation. The idea which also lies behind Craig's conception of scenic decoration.

Tragedy, he says, is essentially a drowning and a breaking of the dykes which separate Man from Man. "It is upon those dykes comedy keeps house."¹ Everything which narrows and intensifies the spatial element in action, which makes us feel that we know every detail of the "here" and "now" of a play, takes away from the abstract emotion which results from our sense of complete unity with the people we are watching. Unity of Imagination in author, in actor, in decorator, in audience is our supreme need. Every complication in scenic order which prevents the actor from conceiving the unity of his part destroys his imaginative illusion and drives him into "character" rather than into "straight" acting.

But this does not take us far enough. What is this illusion of the actor? It consists first of a perfect rhythmic training in his part. He must set up for his audience an illusion of time. The action of the play may cover three periods of forty-five minutes. The action in the mind of the actor and in the mind of the audience must be just what the dramatist intends it to be. The "*three-hours traffic*" of our play, or the passage from birth to the grave.

The method by which this is accomplished is in part the work of the dramatist, but even more, the work of the actor who adjusts the pace and the successive order of each action to the scale of time required; best always when actor and dramatist are one.

Secondly, the illusion of space. And here the scene is vital. At various times the stage has represented many things: a fixed architectural background, whether of

¹ Yeats: Introduction to *Plays for an Irish Theatre*.

pillars or of curtains, of screens or of steps, perhaps the steps before a great cathedral, on which every action required could be adjusted, containing besides only the exit which would give a sense of reality to the action of the actor entering and leaving the stage, and the furniture needed for the action.

Next it has been a multiple setting, such as we have recently seen in *Romeo and Juliet*, where different parts of the action took place in different quarters of a large open stage; the most famous examples of this are found in Serlio's designs after Vitruvius for a "scena tragica," a "scena comica," and a "scena satirica"—or woodland scene in which satyrs play,—created at the end of the fifteenth century. The lovely theatre of Vicenza is such a background, though complicated by some use of artificial perspective. The attempt to create perspective led gradually to change of scene, breaking the action, but doing away with the necessity of maintaining the Unities. Perspectives were the delight of the early seventeenth century stage in France, and later in England. Later the stage tried definitely to add to the illusion of the audience an element of deception. The stage sloped from front to back, the strips of canvas across the scene hung lower in succession from front to back, and the sides of the stage sloped inwards so as to give a sense of long distance.

Sometimes the whole of the side front of the stage was filled with designs of arches, behind which lights could be disguised, while the "arch before the scene," or proscenium arch, stood a little away from the back wall of the stage, allowing for the use of painted backcloths, creating the illusion of distant perspective, changeable at will. The platform stage of Shakespeare is actually a form of the multiple stage. The stage of the Restoration begins the history of the picture background. Finally

comes the "picture frame," proscenium arch of the late nineteenth century.

When the star actor alone dominated the stage, as in the later sixteenth and during the whole history of the eighteenth century, he was characteristically indifferent to scenic realism. He wanted scenery only to help him to act. He felt that if he acted well the audience would have forgotten all about the scenery five minutes after the curtain went up. If they had not so forgotten, his acting failed. He wants a harmonious background, but he has trained himself to move in such a way that he can produce in the mind of his audience an illusion of distance by his very movement. An illusion of time, by his pace and his delays. Above all, an illusion of force, wherever he needs it.

For centuries pasteboard banquets and pasteboard goblets and pasteboard sceptres and crowns graced the actor's ceremonial life. He learned to use them so that the audience believed them to be real. Was this good or bad for his acting? The actor of the older school became so proud of his power to suggest illusion that he grew a little indifferent about his power of suggesting imaginative truth. The dramatist helped him with soliloquies, with asides, with tags hurled at the gallery, or hissed at the pit, and never failed to give him one last telling line on which to make his exit.

So far as we can gather, it all mattered absolutely nothing. Burbage, Betterton, La Grange, Adrienne Lecouvreur, Garrick, Siddons, and Kean reached the inner reserves of their audiences' emotions, and convinced their intelligence as perfectly as our realistic players do to-day. But one thing was fatal. Directly the scenery suggested spectacle, directly the heavens opened and the chariots descended, or Neptune rose from the depths with his nymphs on either hand, we passed from the

world of the actor to the world of the movies, and the illusion of the audience took on another character, the character of spectacular unreality, the joy of the circus, not the joy of the theatre.

What influences changed the situation? First, unquestionably, the development of the actor's own education and intelligence; the abolition, for instance, of the ban which flung poor Adrienne Lecouvreur's body into the common pit, while Oldfield lay in state in Westminster. Voltaire's name stands as the champion of that professional status for the actor, and he learned his lesson in England and took it back to enforce it on revolutionary France. At the same time, he cleared the audience off the stage, where it has always delighted to congregate.

Wherever the status of the actor so improved he began to seek the aid of other artists to help him to harmonize the decoration of his theatre with the nature of his play, and here we make a step further in understanding the nature of the actor's illusion. Coquelin has defined it for us as a dual consciousness. One half lost in the part absorbed in the feeling of its emotion, the other watchfully regulating the effect of those emotions on the audience.¹ He tells us that one day he did completely "lose himself" in a part, and that at the fall of the curtain his son rushed round from the front of the house to know what had gone wrong to make him act so badly.

It is therefore through No. 2, the watcher, and not as No. 1, the artist, that the actor deals with his scenery. Yet there is very little doubt that the independent creations of the scenic artist and his decoration of the stage, the complications that he introduces into the traffic of the scene by taking his players upstairs and downstairs and into my lady's chamber, do not altogether help the actor's illusion in his share of the performance.

¹ Coquelin: *The Actor's Art*, translated by Elsie Fogerty.

It is very important to remember that while the audience see the stage picture, the actors see the back of everything; and that the most important factor in all modern production, light, erects a barrier between him and the audience, and frequently blinds him to all coherent vision by flooding him at inopportune moments with solid paths of coloured glare.

I have seen—not in a London theatre—a Juliet whose moonlight effectually prevented her from ever glancing in the direction of her adoring Romeo during the whole of the balcony scene. To what insanity of “lighting” the modern film has descended only those who have penetrated the depths of Hollywood can adequately measure.

But where the elaboration of modern scenery can be incredibly perfect is in the construction of a modern room for modern realistic acting. We know how poor Tom Robertson longed for rooms in which the windows and doors and fireplaces were architecturally possible, in which the windows could open and the doors could lock, and in which the baronial halls would not shake if the heroine sneezed in their near vicinity.

Where acting depends, as some of the greatest acting does depend, on the simplicity of real presentation, such a set as we now habitually see in a play of modern life in the West End of London fights half the actor's battle for him, not only from the front but from the back of the house, and does away with the necessity for “mumming” his effects. Where phantasy is concerned, we can see exquisite things swept into our view with hardly a moment's wait, and bathed in the light that never was on land or sea. It is where we ask for tragedy and are given the rude incongruity of cubism, where we long for suggestion which will fade out of our consciousness as the actor begins to speak, and find ourselves instead

wondering why that particular staircase has been put in that particular place, and when someone will come down it, that scenery destroys instead of creating illusion.

The too realistic interior tends to hamper the actor's speech. It is so like the room he is accustomed to chat in that he has not the courage to do more than chat. Those who saw the more perfect among the performances of the *Compagnie des Quinze* and watched Tarquin force his way through invisible doors, and along non-existent corridors, while the chorus created the horror of his approach, who saw all the imaginable actions of the "Marne" and the "Loire" carried on without visible properties, understood once more that the genius of the actor can create his own illusion by rhythmic action, and in creating it capture the whole mind and emotion of his audience, and that scenery can only help the audience if it never for any moment hinders or cramps the actor.¹

Here, then, is the perfect imaginative recreation of the Rhythm of life, Action alone, audible and visible, creating the illusion of time, of space, of force, with a minimum of exertion. Such a synthesis established the Theatre definitely within the realm of the fine arts. The training is lifelong, the artist at times seems almost ageless.

Where the Scenic framework harmonizes in simplicity with the actor's technique its function is fulfilled.

It took the scenic artist a curiously long time to realize that what was required was not a flat picture in front of which players could more or less incongruously pose, but the background of the picture which the actors made in acting.

One name, that of Gordon Craig, stands out alone in the accomplishment of this heroic task. Behind his genius was the keen, constructive instinct which once more

¹ Performances under M. St. Denys. •

made the stage "three-dimensional" and gave the actor all space to play in.

In the last hundred years one great thing has been added to the theatre; Drama in itself has become once more a re-creation of life. No great art can work for long on mean and poor material. The rivalry of Music and the Novel destroyed interest in a stage where personal success for the "Star," and a geometric adherence to the "Eternal Triangle," comprised all the resources of dramatic representation.

Ibsen set out a new rhythm. In the tempo of normal life he achieved the abolition of "asides" and soliloquies, and at times imposed on himself a strict adherence to the "Unities" of place and of action. The form of such a play as *Hedda Gabler* is as strict as that of a Greek tragedy.

But no theatre can exist for long on alien corn. The beneficial influence he exerted on construction was enormous. One may hazard the suggestion that, from the point of view of dramatic subject-matter, his imitators would have destroyed the serious stage.

Fortunately they were not given the opportunity. Once more a dramatist of international greatness appeared, and for the first time since Molière the world recognized one figure who could claim the universality of true genius, and challenge the triumphs of the musician in world-wide acceptance. Bernard Shaw postponed the decline of vivid, imaginative, and rhythmic writing on the stage for another fifty years. The future critic will unhesitatingly say that he saved the English stage by a mastery of style and a power of creative characterization never since Shakespeare's day united in one personality. It is easy, in our nearness, to see and point out the spots in the sun, but dramatically we have lived by the warmth of his creative energy. Rhythmically he has made the long-sustained expression of intellectual

emotion so great an excitement and delight that we have almost forgotten how beautifully timed and balanced a delivery he exacted from his executants. He has called out genius even in those who most violently disliked and opposed his intellectual position. He has peopled the world with a new population of living personalities. Neither lay-figures nor caricatures, but living beings; to all of whom the author of their being had been scrupulously fair, in opportunity for self-expression, and in his care not to convert them into monotonous "types" by repetition in a later series of plays. It is acting drama of the very greatest kind sustained in an output worthy of the heroic ages of the past.

How much he owed to his intimate and critical study of Music during the formative years of his early life in London it is not easy to say, for Music, and above all the different forms of Music-Drama, were the most dangerous rival of serious acting during the second half of the nineteenth and the first ten years of the twentieth century.

What lyric variations of rhythmic invention mark the inspired work of Gluck, of Mozart, of the Russian folk-song operas, and, in a more melodramatic manner, of Weber, is a matter of universal recognition to-day. Mozart in particular expresses in Music that divine outpouring of fresh and impassioned beauty which comes but once to each of the arts in turn, when for the first time they achieve the re-creation of life in a new and spontaneous inspiration.

Music still demanded a further expansion in the freedom of rhythmical structure, the abolition of the conventional repeated phrase, and, in addition, some form of vocal and rhythmic adjustment to the Spoken Word, before Music-Drama in the true sense could come into being.

•

The latter half of the nineteenth century saw the achievement of both ends.

Le rythme fut traité par les compositeurs non plus comme une "arithmétique hygiénique"—mais comme "un équilibre subtil où la durée, l'intensité, la hauteur et le timbre contribuent à parts égales."¹

When Chaucer's "Verray parfit Gentil Knight" betook himself on adventure he went regularly to fight the Pagans in Prusse at the close of the fourteenth century. Two centuries earlier, the *Chanson de Roland* shows us the weary Titan Charlemagne turning off in the same direction to face the inrush of Barbarism.

Century after century the softer beauties of Italy, the artificial splendours of Versailles, drew away the south and centre of Middle Europe from any fixed National expression, and created the charm of Baroque architecture and Dresden taste. At last, in the eighteenth century, and still more after the fall of Napoleonic power, the overwhelming triumphs of Goethe's genius,² of the critical philosophers, of Beethoven³ and the Vienna School, impressed the individual and indigenous character of German culture on Europe and on the New World.

It was an essentially dramatic genius, but behind it, still in a measure unformulated, lay a mysterious world of Pagan legend, of ruder chivalry, of wild romantic and violent tradition. It was on this that the individual and almost demoniac genius of Wagner seized for the expression of a personality never harmonized to the common heritage of Western Christianity.

He gave to Germany at once the novel achievement of Music-Drama, and the first coherent dramatization of

¹ Louis Laloy. Cited by René Dumesnil: *Le Rythme Musical*, p. 115.

² 1749-1832.

³ 1770-1827.

her National Epic, with its mixed Burgundian, Icelandic, and Teutonic mythology.

His claim was for the establishment of the most complex Art form ever conceived. He believed that to secure its Rhythmic Unity every part of it must be creatively accomplished by one individual genius.

By a disregard of all impeding consideration, by a courage almost ruthless in its strength, and a genius rooted in the most unsparing egoism he practically carried out his purpose; where he failed, when he did fail, it was from the hopeless conditions of his day, and of his artistic environment, never from want of capacity or of unsparing industry.

Briefly he demanded the synthesis of the Static and the Mobile Arts. Backgrounds which only the world's greatest artists could design, and which actually helped when he found the right men to carry out his ideas, to revolutionize Scenic Art.

Orchestration which had the weight and instrumental force of symphony writing, and superimposed upon it sung partitions for which the performers had yet to be evolved,¹ demanding vocal capacities which he himself could not at first evoke. Theatres large enough for such works had yet to be built, lighting only just caught up with his demands as his life ended.

It was an apocalyptic achievement; we hardly know yet whether it is to remain as unique as it was awe-inspiring, but one thing it seems to have accomplished: the death of great dramatic and emotional tragedy. Its influence on the stage proves to have been greater than its influence on Music.

It demanded the use of Music itself as a means of dramatic expression; the use of the singer's voice as one instrument in the orchestra.

Mozart is master of musical characterization, but Wagner accomplished something quite different. In the "leit-motiv" he translated into a musical phrase, based on rhythm rather than on melodic flow, the essential emotion which characterizes a personality, a situation, or an emotion. These things have in themselves a rhythmic character, independent of words, independent of musical time signatures, independent even of melody.

When this rhythmic phrase has become associated in our minds with its dramatic significance, each repetition intensifies its effect, and transports our minds into the action or mood of the music. Mozart in *Il flauto Magico*, Beethoven in the overture *Leonora* No. 3, have used certain subjects to work out dramatic meanings. Liszt had actually anticipated the Wagnerian use. In Wagner the phrase is always short and clearly defined; at its first appearance it is usually underlined by words giving its meaning. Later it seems to follow every turn of the mental conflict associated with its enunciation and to carry us along in a true dramatic illusion.

Rhythm is the preponderating element in this theme structure, particularly where descriptive effects are underlined. The forging motive¹ in the *Ring* is a good example.



The numberless changes of the *Walhalla* motif, the bells of Montsalvat in *Parsifal*, and the first love motif in the *Meistersingers* have a curious likeness in musical outline, while their temporal progression is completely different.

¹ See Chapter V, p. 88; Chapter VII, p. 143.

The present development of Musical Drama does not follow the Wagnerian tradition. Strauss's *Rosenkavalier* goes back to the gay amorous tradition of old Vienna, but the Waltz rhythms which glitter through its merry pages, the perfect accord of action and sound, belong to the Mozartian tradition of drama, rather than to the unreal warbled arias of the early nineteenth century.

What the great musical interpretations have definitely done is to exhaust the possibility of supreme emotion, both in tragedy and in comedy; they throw back drama on intellectual delight in dialogue, and character, or on the unfolding of human nature on the one hand, and situation on the other.

The panoramic character of Wagner's scenic action almost suggests a use for the rhythm of film technique, should that ever be a reality. Indeed, the one beautiful film sequence ever created was the *Ring of the Nibelungs*, which played for some two or three weeks to the empty benches of the Royal Albert Hall before the days of the Talkies.

Closely linked with Opera is the art of Ballet; last offshoot from the art of the Comedia dell' Arte which has so suddenly flowered among us into a new and wonderful art form.

Havelock Ellis, in his *Dance of Life*, has given expression to the rhythmic character of dancing as an art.

The significance of Dancing, in the wide sense, thus lies in the fact that it is simply an intimate, concrete appeal of a general rhythm. That general rhythm which marks, not life only, but the Universe, if one still may be allowed so to name the sum of the cosmic influences that reach us.

It need not surprise us at all that rhythm, ever tending to be moulded into a tune, should mark all the physical and spiritual manifestations of life.

Dancing is the primitive expression alike of religion and of love.

Of religion from the earliest human times we know of, and of love from a period long anterior to the coming of man.

The same impulse which produced the Pantomime produced modern ballet. In both cases one is inclined to think we may trace the influence of the same Etruscan and Tuscan race which so long has had its seat there; a race with a genius for expressive, dramatic, picturesque art.¹

The magnificent designs still in existence of pageants, triumphs, and masques in Italy, in Southern Germany, and France, make it abundantly clear that the spectacular side of ballet has a long history. Its actual origin is attributed to the spectacular pageants at the marriage of Galeazzo Visconti, Duke of Milan, in 1489.

But the antiquity of the Art is fabulous. An old Chinese problem bids us judge the reign of a king by the state of the dancing in his kingdom.

Among the varied authorities quoted by Havelock Ellis in his exhaustive survey, Stanley Hall urges the need for a revival of dancing to give poise to the will, and to

harmonize the feelings and the intellect with the body which supports them.

Dancing is the loftiest, the most merry, the most beautiful of the arts, because it is no mere translation or abstraction from life, it is life itself.

Blake hopes to amuse the Spectres in the sky by the figure he makes in the dance of life, and from Nietzsche comes the lovely phrase:

The art of Life is a dance in which the dancer achieves the rhythmic freedom and harmony of his soul.

During the end of the eighteenth and the early half of the nineteenth century, Milan, Vienna, and Paris became the centres of Schools of "classic" ballet dancing.

¹ Havelock Ellis: *The Dance of Life*.



TAGLIONI "SUR LES POINTES"

The figure of Taglioni is reproduced by kind permission of Mr. Ashley Dukes from his beautiful collection of prints in the foyer of the Mercury Theatre, Mme. Rambert's Ballet School

her poses. "Levitation," the lifting of the body weight on the tips of the toes, during long periods of movement, is specially characteristic of modern ballet. One great Spanish dancer actually accomplished this on her bare feet, but in all ordinary ballet dances the toes are supported by block shoes, which take part of the weight. It is obviously one of those efforts to transcend the limits of ordinary locomotion which seem peculiar to man, and when the work is perfectly done it suggests a defiance of the laws of gravity, like ski-ing or high jumping. Whenever this type of dancing has remained long isolated without external influences, it has tended to become stereotyped and mechanical; the aesthetic idea of the human figure has been lost, as in the pantomime and other ballets of Victorian days, when men hardly ever danced; but where such dancing has been linked with opera, as in the late eighteenth and nineteenth centuries, where it has harmonized its tradition with that of great national dancing, as in Russia, it is magnificent.

The figure of Taglioni remains a type of almost super-human grace, and like many of her great successors she revolutionized the art she practised. The aesthetic tradition of movement, decoration, period, and style of chorography has been established, and has shown a singular power of persistence and force of inspiration. We are living in an age of great ballet. The artists associated with it have probably shown supreme mastery in the art, and it is interesting to trace the causes for their rhythmic success.

Alone among the arts, dancing is exclusively rhythmic in both space and time; in extent at any moment it presents a kaleidoscopic pattern; in time or succession that pattern moves from its initiation to its close, and we do not know its form till the last chord of the music has died away.

The time actually passing while we watch such a performance is unusually and deceptively brief. We are under the illusion of having passed through the events of a whole evening in a matter of twenty minutes. This indicates the intensity of the emotional and aesthetic appeal at every moment of a performance. The kinaesthetic appeal of vital and harmonious motion calls up in us the sense that we are not merely watching, but moving in the rhythm before us. This is overwhelmingly true of dancing. The music of the ballet generally is, and always should be a complete composition, giving successive variety of character and colour to each movement. The conventional costume, artificial decor and stylized postures carry us away from reality into a world of pure rhythm and design, where we see beings seemingly endowed with all the grace of movement we desire. Lighting and decoration harmonize their lines and action to the musical rhythm, and its balance between space and time. From beginning to end there is a sense of perfection without effort.

Style, the intensification of typical action and design, which is always conditioned by the artist's own experience,¹ is a speciality of the ballet. Every cheap and obvious effect must be rejected; within the limits of their own accomplishment the performers are faultless, unrealistic, and harmonious.

A hundred years ago the male dancer had practically died out, and the women's art had become unduly muscular. The art was mixed with musical shows and burlesque.

The Paris tradition was the most perfectly maintained. It inspired Degas with some of his finest studies, of which one is reproduced facing page 230 by permission of the Trustees of the Tate Gallery. It expresses

¹ See p. 205.

magnificently the rather exaggerated masculinity of the period.

Russian Ballet was introduced by the Empress Anna 1738, and was at first a court function and French in character and origin.

What we saw here, in the Russian ballet as we originally knew it, was splendid. Arduous technical tradition brought at last—by the combined skill of designers, composers, and dancers—into real fusion with an environment from which during more than a century it had been held apart. Russian genius for music, Russian feeling for rhythm, Russian skill in the use of bright colour, and not least, the Russian orgiastic temperament, the Russian spirit of tender poetic melancholy, and the general slav passion for folk-dancing shown in other branches of the race also.

These were its inspiring forces.

Wherever now we find any restored art of theatrical dancing, it has been inspired, more or less, by an eclectic blending of two revived forms; the Romantic from Russia, the Classic from Greece, England, and America.¹

The result has been that our age sees one of the most splendid movements in the whole history of the ballet.

Its history is described in Karsavina's wonderful autobiography, *Theatre Street*, and in Mme Nijinsky's beautiful and tragic life of her husband. First came the existence of a school which is perhaps only possible under an autocratic and aristocratic society, where the rules of study, the abnegation of individual home-life, and the wide and lavish curriculum were all supervised by those who could afford any extravagance to achieve their end; the unifying of all life into an art form.

Then there was the fortunate contemporary existence of a group of geniuses; dancers like Pavlova, Karsavina, Mordkin, and Nijinsky, to take advantage of this traditional training. The designs of Bakst, the music of

¹ Havelock Ellis, *op. cit.*



BRONZE STATUETTE OF "ARABESQUE" DEGAS

By kind permission of the authorities of the Tate Gallery, Millbank, S.W. 1

Stravinsky, Rimsky-Korsakov, and Debussy were inspired by the new form. But the one accident of strangeness which seems inseparable from great beauty was added by the infusion of a different style; a strange, wayward genius, Isadora Duncan, who had worked along totally different lines, attracted the attention of these great artists.

The revival of Greek dancing had begun to reassert itself in the last years of the nineteenth and the beginning of the twentieth century. Its rhythms related more to arm, head, and trunk movement than to footwork; its actual origin lay in the renewed attempt to act the Greek plays when archeological discoveries had restored some sense of how they were performed; a study of the rhythms of the vase figures, and friezes, a deliberate attempt to recover the true quantitative rhythm of the verse on which the movements had been originally based, the revival of choric speaking, the brilliant translations of the plays into English by Professor Gilbert Murray—all these brought into being the experimental performances at the Court Theatre and the Scala, from 1903 to 1914. Here was the influence which created the movement for the revived Greek dance.

Isadora Duncan's genius was entirely original, and her chorography was related rather to the teachings of great artists, of her brother Raymond Duncan, and of Gordon Craig, than to any dancing school. Karsavina summed up her influence in one phrase: "She could not do what we did, but we, with our training, could easily accomplish what she had inspired us with the desire to attempt."¹ "Inspired" them to reject the last vestiges of acrobatic or scholastic rhythm, to reject all technical displays based on mere difficulty, or exaggerated force; to restore the equality of the male dancer in the

¹ Tamara Karsavina: *Theatre Street*.

ballet. Fokine and Diaghileff were the two masters of the new and inspiring revival, and the tradition they established still lives.

The result was a flowering of grace and beauty; we saw an intensity of restraint, a grave virile art, a classic simplicity of outline and gesture, combined with an almost barbaric vitality—characteristic of Russian folk-dancing. It is doubtful whether the sensation achieved has ever been equalled in the theatre. In Karsavina's dancing, the perfection of the great tradition of classic method was dominant, in Pavlova's, the harmony of the rhythm never broke for an instant; every physical and psychological quality in the dance was completely integrated in the quality of her movements; those who saw her with Mordkin and Nijinsky witnessed one of the supreme combinations of technical and emotional rhythm, as accurate as an instrumental performance, and as varied and moving as a rhapsody. She could fall at the end of a seemingly headlong run with her face just an inch or two from the floor of the stage, and every line relaxed in perfect ease. The inspiration given has lasted for over twenty years, fluctuating in its quality, but definitely adding a new rhythmic capacity to mankind.

So far as the Greek element is concerned, historical and practical experience almost instantly showed its tremendous educational value, as perhaps the most natural means of harmonising the rhythmic life of young people. Shorn of its more exotic and technical difficulty, it has been almost universally adopted as the revived Greek dance. When it is taught by those who are themselves trained dancers, we seem to be returning to a sense of physical significance and beauty, which was badly needed to counteract the influences which make for violence, speed, and staccato over-stressing in movement.¹

¹ Ruby Ginner: *The Revived Greek Dance*.

Curiously blended with the true ballet dance, we find the influence of light in the theatre, and as in the consideration of Natural Law, the motion of light was used as the most perfect instance of Rhythm, so no chapter of man's long development is more fascinating than his subjugation of light to his own social needs.

Every step in the story is an achievement, won through a deeper understanding of Rhythm and of man's power to control it.

To have been present at the first realization of such a "Universal" aesthetic birth is an unforgettable experience; it seems like the evocation within ourselves of a rhythmic response which has all the reality of participation in the thing seen. We seem to have helped to make this beauty by our instant response to its creative force. It is the creative character of such achievements which gives them their universality. They transcend and sublimate the individual genius producing them; they take into themselves and harmonize all the minor surrounding rhythms of colour, light, sound, or design which are characteristic of their time and place.

Modern taste has seized upon certain elements and stressed them overwhelmingly.

The spirit of speed, the streamlined vigour, the vivid stylized colours and lines of the decor, the unanalytical nature of the dramatic action, all these belong to our own age, and express it perhaps more completely than any other art of which we so far have knowledge.

Here is the real influence behind much modern music. Debussy wrote his *Enfant Prodigue* for the mimes of the Cirque funambulesque, and Felicia Mallet. It is based on the rhythm of unspoken words, not on ballet mime, but in *L'Après-midi d'un Faune*, inspired by a poem of Mallarmé, he gave Nijinsky his perfect opportunity.¹

¹ Romola Nijinsky: *Nijinsky*, p. 149.

Stravinski in his *Le sacre du Printemps* touched the fierce underlying paganism of a primitive dance. These are only individual and familiar examples of the influence on modern composers of this new atmosphere for their art, congruous to all modern tendencies, robbing music of some of its individual significance, and in a measure using it as an applied art in the theatre, but releasing it from many outworn conventions, and renewing opportunities for rhythmic creation.

This concludes a compressed and often hurried attempt at some synthesis of rhythmic expression. A brief list of the conclusions suggested in all the previous chapters, and a few questions as to the rhythmic developments which seem to wait for a world bound in by metric machinery, are included in the last pages.

CONCLUSIONS

THE conclusions suggested by this attempt at a synthetic survey of Rhythm may be summarized as follows:

- I. In Natural Law Rhythm implies the automatic harmony of Time, Force, and Space in the accomplishment of any definite action. It appears in wave action, in pendulum movement, and in vibratory action, such as that experienced in Light and in Sound, or in Electric force.
Above all, it is shown in the rotary action of Sun, Moon, and Earth, and in the planetary interactions of the solar system. The succession of the Seasons, of Night and Day and of the Tides, depends on this rotary action.
- II. Metric repetition, in exactly isochronous time periods, is the simplest form of Rhythm; it is generally found in mechanically induced action only. The beat of a metronome is less rhythmic than the musical phrase it helps to scan, though the latter may show only a periodic recurrence, and give no instance of exact repetition.
- III. Rhythm in a fixed and determined circle of unvarying action is not capable of vital or aesthetic development; it tends to be limited in its extent and in its achievement; free rhythmic action has a creative influence in the development of living forms, and in the establishment of habit.
- IV. In the observation of all human activities, symmetrical and ordered results are always accomplished through rhythmic action. This is also true of certain natural phenomena, such as the regular

stratification of rocks, the general character of crystalline structure, the formation of shell shapes, the growth of tree trunks, and the history of certain insect metamorphoses.

- V. All regular recurrent action must be rhythmic in character; without measurable continuity and discontinuity in Time, in Force, and in Space, we could perceive no recurrence. In human activities, when rhythmic continuity is once established, a series of actions, such as those employed in a craft, or in a game, may be performed without exact repetition. Any single action of a rhythmic character, such as tossing and catching a ball, may be performed once only, without destroying its rhythmic character.
- VI. In the development of Man, it would appear that the rhythmic nature of his organic functions, and of his cerebral response to environment, may explain the comparatively rapid nature of his development in regard to his upright stance, and to speech. Only rhythmically recurrent causes have the power of developing "Habit"; this suggests a possible explanation for the growth of instinct in individual life and in group organization.
- VII. Man's capacity for individual and social development, and his whole power of survival by adaptation, depend on his facility in establishing kinaesthetic memories; so he ultimately creates a "Conditioned" Reflex. In the capacities so developed, we perceive, generally, a marked rhythmic character; particularly in ceremonial, ritual, social customs, crafts, and folk art. Once established they can be applied to a free choice

of action or design. The special human character of such capacities lies in man's power of liberating his individual mind in the higher faculties of enjoyment and of appreciation, while carrying on the rhythmic accomplishment of his acquired technical skill. All sports, crafts, and games depend on this combination of skill and enjoyment for their perfect accomplishment.

The development of human speech has been so far the greatest instance of such accomplishment, in the combination of utterance, linguistic memory, logical or aesthetic significance, and mutual understanding.

- VIII. Rhythmic action is effortless in itself, but it always stimulates to further effort. Its maintenance calls out a desire for some progressive increase in difficulty of performance—a delight in creative activity. Man's historical record of Art and adventure illustrates this.
- IX. Ceremonial order and ritual, expressed in corporate rhythmic action, gave birth to a social complexity which demanded the development of Architecture. Man's power of defence and his social activities progressed rapidly as the craft of building grew; sculpture and painting originated in the decorative enrichment of Architecture and in Worship; each stage found its opportunity through the inspiration of Rhythm. Dance, Music, Poetry, each beginning as a form of ritual or a mnemonic system of conserving national tradition, flowered almost simultaneously, in varying races, and distant countries, into the greater mobile Arts.
- X. The secret of Man's rapid growth in inspiration

may be found in his sense of inner harmony between his powers of expression and the universal rhythms of Nature and Life; in what we term Truth and Beauty. He found emancipation from the tyranny of economic necessity in this, and in the freedom of Moral Law. This led him to a religion of tradition and ordered ceremonial. The vision of Divine Order impressed itself at last upon his consciousness.

- XI. To-day Man is faced by a sense of reaction against too mechanical an order. He has left behind the herd, the horde, even the tribe and the clan. Under the economic tyranny of mechanism he is in danger of degenerating into the mob. The closed circle in creative evolution generally led to a dead end, and the arrest or extinction of a species. The individual danger of excessive reliance on mechanism is, that it fails to develop within us the kinaesthetic memories which enlarge and enrich our capacities. The clicking of a camera shutter, the turning on of the wireless or a gramophone record, the watching of a film, fail to produce at any point in the history of their use (or indeed of their construction) the creative joy, or the rhythmic capacity, which we know in the art of painting, of music, or of drama. Man is developing a strong antagonism to all strict temporal or spatial order; to all technical skill in the arts or in drama. On the one hand "Jazz," free verse, surrealism, illustrate this tendency even among gifted artists. On the other we have the complete submission to metric mechanism in the horrors of "tap-dancing," "crooning," or the "plugged" theme song.

- XII. It might be possible to perceive similar reactions in the two great conflicting political tyrannies which claim the allegiance of Europe to-day; in the open conflict between the slavery of economic law, and the freedom of the moral law.
- XIII. Man's mind should be capable as never before, of realizing and of escaping from those stultifying extremes. His true capacity for progress lies in a constantly growing knowledge of, and harmony with, rhythmic law; a constant limitation of the violence which makes for disintegration.
- Materialism is so obviously a declining influence in all the higher levels of research and of philosophy, that we may hope these seeming antagonisms are only a receding wave in human progress. The secret of renewed advance lies in setting free creative imagination in the individual, and in the race, to overcome economic and moral unscrupulousness.
- Our poetic vision is still radiantly alive, and can lead us into unity with the controlling Rhythm of the Universe in Truth, in Beauty, and in the indwelling knowledge of Divine Mystery.

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