

EVOLUTION OF MUSIC FROM DANCE TO SYMPHONY.<sup>1</sup>

A BLUE egg may become a robin. The latent life sequestered by marble walls may be warmed into activity, and gather to itself the crumbs from a cottage table, and weave therefrom the tissues of life, — feet to perch among the blossoms, wings to fly among the trees, eyes to revel in the scenes disclosed by sunlight, and vocal organs to sing the song of love to mate.

A tiny seed may become a "big tree;" for, warmed into life, it sends its rootlets into the nourishing earth and its branches into the vivifying air, and gathers materials with which to build a *Sequoia*, that stands for centuries as a glory in the forest of the sierra.

The rill born of a summer shower carries the sand from the hillside and gives it to the brook, and the brook bears it on to the river, and the river transports it to the sea, and the impregnated tide finds a nest beneath the waves and in it lays the egg of an island. Then this boss on the floor of the ocean has the power to gather about it more sands as they come from the distant hills, and still more sands. Every summer shower gives it more, and every storm adds to the sands that are thus buried beneath the sea, until at last an island is hatched, as it lifts its head above the waves.

Robins grow to be robins by minute increments; trees grow to be trees by minute increments; islands grow to be islands by minute increments. There is an aphorism current in the world that like begets its like: it is but half the truth. Whatever is, changes, and no repetition comes through all the years of time: some minute change must ever intervene. Among living things one generation follows another, always with some change; and change on change in sequent reproduction, as the stream of life flows on, results at last in transformation. This slow but sure metamorphosis is called evolution, and the scientific world is engaged in the formulation of its laws.

The laws of animal and vegetal progress, otherwise called biotic evolution, do not apply to mankind in civilization. Biotic evolution is progress in bodily function: human evolution is progress in culture. The one is dependent on the laws of vitality; the other, dependent on the laws of psychology. The first great law of biotic evolution is denominated "the survival of the fittest in the struggle for existence." This law does not directly apply to man in his progress in culture. The bad are not killed off by any natural process in order that the good may survive and propagate their kind. Human progress is by human endeavor, by conscious and designed effort for improvement in condition.

The second great law in biotic evolution is denominated "adaptation to environment." But man is not adapted to environment: he adapts the environment to himself by creating that which he desires. For example: no natural protection to his body is developed by which he is adapted to a boreal climate; but he adapts that climate to himself, modifies it in its effect upon himself by building a house and creating a home climate at the fireside, and when outside of his home he protects himself with clothing, and creates a personal climate, and laughs at the winds that drift the snow. Man is not adapted to environment; but he adapts his arts to environment, and creates new conditions to please himself.

The third great law of biotic evolution is denominated "progress in heterogeneity." With time, animals become more and more diverse in structure and function. Kinds or species multiply. But this law is reversed with men in civilization, for they become more and more homogeneous. The tendency is not to differentiate into species, some with horns and hoofs, some with tusks and claws, and some with arms, and some with wings. The tendency is not towards specific differentiation, but towards specific homogeneity.

There is, however, another kind of differentiation that develops by culture, which may be denominated "qualitative differentiation." Human beings do not develop along divergent lines, but along parallel lines, and they differ mainly in the degree in which they have made progress. Human evolution develops not different kinds of

men, but different qualities of men. The apple-tree under human culture does not develop in one line to bear peaches, another to bear plums, and another to bear pine-apples: but the fruit of one tree is sour, and that of another is sweet; one is dwarfed, gnarled, and bitter, another is large, roseate, and luscious. Human progress is such culture. It develops different qualities and degrees of the same thing. There are apple-trees that bear nothing but sorry fruits. There are tribes of the world that are all savages. The trees of higher culture bear fruits of diverse qualities. The well-developed pippin, the diseased pippin, and the shrivelled knot of bitterness grow on the same tree. So in lands of highest culture men are good and bad, wise and unwise, but they do not thus become specifically different.

The fourth great law of biotic evolution is denominated "progress in integration." The differentiating parts also become more and more interdependent. The organ which can best subserve its purpose is less efficient in performing an unwonted function: it therefore becomes dependent upon other organs, and the interdependence of all the parts of the same organism increases with evolution. Society is an organism. The people organized as a body politic, and constituting a nation, become interdependent, and each one is interested in the common welfare. In the growth of society through the organization of kindred into clans, and of clans into tribes, and ultimately of tribes into nations, great progress in integration is made, and it receives its highest development when despotism is organized. If we study the progress of society through these stages only, we are led to conclude that biotic evolution and human culture follow the same laws, for the integration of mankind in despotic nations is measured by the perfection of despotic governments. The highest integration is secured with hereditary rulers, privileged classes, and enslaved common people.

The progress of mankind from despotism to liberty has been one vast system of warfare against integration, until in perfect liberty under free institutions this integration is destroyed, and the biotic law is repealed in its application to mankind. The development of liberty is the overthrow of the fourth law of animal evolution.

Liberty means freedom to the individual, and is secured by establishing interdependence of industries: thus man transfers despotism from himself to his inventions.

No cruel law of destruction belongs to mankind. No brutal adaptation to environments occurs in the course of human culture. No differentiation into antagonistic species is found. And liberty destroys despotic integration.

The laws of biotic evolution do not apply to mankind. There are men in the world so overwhelmed with the grandeur and truth of biotic evolution that they actually believe that man is but a two-legged beast, whose progress in the world is governed by the same laws as the progress of the serpent or the wolf; and so science is put to shame.

Since the doctrines of evolution have been established, the basis of systematic classification has been changed. Artificial categories have given place to natural categories in such a manner that the classes are believed to represent genetic relations. The search for natural categories began anterior to the establishment of the laws of biotic evolution, and the new philosophy would be unrecognized but for the work which systematic biology has already done. Natural classifications and the laws of hereditary descent develop together, and are interdependently established. Still it remains that genetic biology, or the science of the laws of the progress of life, imposes conditions upon systematic biology; for a natural classification must reveal the fundamental epochs and phases of evolution.

As human progress is not upon divergent lines, but upon the same line to the goal of a higher life, men must be classified, not by biotic kinds, but by degrees of culture; and the three great culture stages, not three great kinds of men, be it understood, have been called savagery, barbarism, and civilization, to which a fourth may well be added, that of modern civilization, — the stage of enlightenment.

That which makes man more than the beast is culture. Culture is human evolution; not the development of man as an animal, but the evolution of the human attributes of man. Culture

<sup>1</sup> Address by Major J. W. Powell, the retiring president of the American Association for the Advancement of Science, delivered at the meeting in Toronto in August.

is the product of human endeavor. This is the burden of my argument.

In man's progress from savagery to enlightenment, he has transferred the laws of beast evolution from himself to his inventions, and, relieved of the load, he has soared away to the goal of his destiny on the wings of higher laws.

The evolution of music has been presented as an illustration of this fact. Man as a poet has not developed by the survival of the fittest. There has been no natural system of laws by which the bad musician has been killed, and the good musician permitted to live and propagate his kind. There has been no system of natural selection to kill poor singers and cheap fiddlers.

There is no adaptation of musicians to environment. There are no aquatic musicians; there are no aerial musicians; there are no tropical musicians; there are no boreal musicians — as those terms are used in biology. The prima donna that sings in Rome may sing in St. Petersburg. The artist on the violin may enrapture the people in Toronto, in Washington, or in Mexico, and an orchestra may play on the land and on the sea.

Again, there has been no progress in the differentiation of musicians. There is no musical species. There is no distinct race of prima donnas. There is no endogenous clan of organists. Musical folk spring up among the people everywhere. Of two children of the same parents, the one will be musical, and the other will not be. A sister will play the violin with beauty, and a brother may love nothing better than an accordion.

Every nation and tribe on the face of the earth has developed its own musicians; and when a great artist springs up in any land, he travels the world, and delights all the people of civilization. Ole Bull, like Orpheus, would make the stony hearts of all men dance; and Jenny Lind could sing a song of sorrow to weeping multitudes in any city of Christendom, and, if the angels loved not her music, small be the meed of praise for angels.

And, lastly, there is no integration of musicians. They are not organized into one body politic. They do not inhabit one little nook of the world. They are not gathered by themselves on one isle of the sea. The king of players is metaphoric king, the queen of singers is metaphoric queen.

But though these laws of evolution do not apply to musicians, they do apply to music itself. Man has transferred them from himself to his musical inventions. Ever there has been a survival of the fittest. The music of savagery is lost in barbarism. The songs of barbarism are lost in civilization, and modern music is replacing the music of our fathers. So the old grows into the new by the survival of the fittest; not by natural selection, but by human selection, for men choose to keep the music they love the best.

There has been progress by differentiation in music. Gradually music has developed into distinct parts; and with the invention of musical instruments, musical compositions have been produced adapted to each. There is the music of the organ, the piano, the flute, the violin, and instruments too many to tell, and thus the world is filled with varied music.

Music has been adapted to environment. There is music for the dance and for the battle; music for the wedding and the funeral; music for the theatre and the temple; and there is music about every thing, — the land, the sea, and the air, the valley and the mountain, the flower and the forest, the fountain and the river, the worm and the serpent, the zephyr and the tempest. There is music for all peoples, in all climes, in all conditions. The varieties of music parallel every human thought.

There is integration of music. When a band plays organized music for the military parade, many instruments combine to play their parts in harmony. There is organized music for the temple, where the choir and the instruments combine to make music for prayer and praise. But the highest development of musical integration is found in the orchestra, where the parts of the symphony are played in sweet unison, in grand harmony and sublime sequence, guided by the magic *baton* of the leader.

Music is the invention of mankind; not of one man, but of all men, — of composers, performers, and hearers. Music has come down the stream of time; and as the rivers grow from source to sea, so music grows from primal time to vast eternity.

In the same manner we may take up any one of the elements of human culture, and develop the laws of its evolution, and find that all culture comes by human endeavor. All arts, all institutions, all languages, all opinions, have grown in obedience to the laws of evolution as set forth; and in the exercise of all these human activities man himself has been developed: so the laws of biotic evolution apply not to mankind. Beast is beast, man is man.

I have affirmed that the laws of biotic evolution do not apply to human culture. To make this clear, concrete demonstration is necessary. On this occasion one of the æsthetic arts will be used for this purpose. The evolution of music will be portrayed and its laws developed, and it will be followed briefly through the four stages of culture, — savagery, barbarism, civilization, and enlightenment.

The classic categories of biology should represent genesis by differentiation, but it has been shown that man cannot thus be classified. Man by his genius has transferred the application of the four great laws of biotic evolution from himself to his inventions. Human inventions evolve by human selection; and there is a survival of the fittest, an adaptation to environment, a progress in differentiation, and a progress in integration. Human inventions, therefore, should be classified in such a manner as to exhibit their genesis by differentiation.

If we classify the fine arts on these principles, we must place them in four groups, as we find them arising from four germs. It is true that their development has been more or less interdependent, yet they have four origins, and have developed along four lines, both in form and motive.

Fetich carving was the germ of sculpture. Stone, bone, shell, wood, and various other materials, were used by the sculptor in which to carve the forms of his beast gods. Carving begun in this rude way developed at last along two lines, one leading to idolatry, and the other to sculpture.

Picture-writing was the germ of painting. Early man daubed rude pictures on bark and other materials, and etched them on stone. The alphabetic arts also sprang from this source, as writing, printing, and telegraphing.

Mythology was the germ of drama. Early man believed the animals to be the creators and movers of his universe, and the stories of the doings of beasts constituted the first drama. Later romance sprang from the same source; and from romance, biography and history. Along another line from the same germ sprang science.

The dance was the germ of music and poetry. Poetry derived its form from the dance, and its earliest motive from mythology. The evolution of music will be set forth more fully.

Sculpture represents material forms in solid matter, as wood, clay, stone, ivory, and metal.

Painting represents forms and scenes of nature and human life in color, as light, shade, and hue, through the aid of form perspective, distance perspective, and aerial perspective.

Drama represents scenes in the life of human and mythic heroes by personation or mimicry combined with literary presentation.

Romance represents biography and history in fictitious tales.

Music represents ideas in sound by rhythm, melody, harmony, and symphony.

Poetry represents psychic pictures by metaphor, through the aid of rhythmic literature, sometimes using rhyme and alliteration.

The arts have thus been described by defining their forms; but each has something more as a reason for its being an æsthetic art, — a purpose to fulfil. The motive of all the æsthetic arts is to reach the intellect through symbols, and thus kindle the emotions. All art is therefore symbolic and emotional.

Let us turn to the evolution of music.

This is the burthen of my song, this is the theme that runs through my melody: that music, in harmony with all of the processes of becoming in nature and art, becomes by minute increments, — by growth. How, then, did music grow?

It has been assumed by writers that music has its origin and development in the innate appreciation of the human mind for the rhythms, melodies, harmonies, and symphonies of nature; that it

is the spontaneous outburst of the human soul in response to the music of the physical and animal world. The sighing of the winds, the murmur of the rills, the roaring of the cataracts, the dash of the waves on the shore, the singing of the forests, the melodies of birds, — all these and many more have been considered as the teachers of music to man. The objective study of music among the lower tribes of mankind and among the various peoples of the world in different stages of culture, and of the history of music itself as developed by our own race, leads to a different conclusion.

Kids gambol among the rocks as if filled with joy; colts run about the pastures as if mad with ecstasy; cooing babes pommel vacuity and kick at void with hands and feet as pink and soft as petals of the rose, and seem delighted with the gift of new-born life; lads and lasses play in the park with shouts and laughter, as if existence was forever a May-day of sport.

There is pleasure in activity. The laboratory of life evolves a surplus of motion the expenditure of which gives rise to joyous emotions expressed in rollicking, boisterous play.

In youth and health and vigor there is in the exercise of the muscles and the motions of the limbs a joy which may be heightened as many become associated in the same activities, — brothers, sisters, cousins, sweethearts, wives, husbands, and parents. Let them unite in sportive activities, and the very ecstasy of motion is produced. When such physical activities are systemized, the dance is organized. When a group of pleasure-seekers organize their activities in such a manner that the motion of every one is in harmony with the motion of every other one, the merry dance is an art and a social institution, and every one's joy is multiplied by every other one's joy. Then rhythm of motion becomes rhythm of emotion.

Man early learned that it was easier to control movements of dance by sound than by sight, and so he marked the rhythm of the dance by sounds of the voice or by sounds of the drum.

Blue-eyed children play with the brown-eyed, and brown-eyed children play with the black-eyed, and they all join hands and play "ring-around-a-rosy;" and out of this childish sport, by minute increments, musical rhythm becomes.

The first dancers were the men who lived in the forests, around the sheltered bays of the sea, on shores where quiet lakes mirrored the wild bird's flight, or on banks where the fishes sported in the wavelets of the brook.

The Eden of these sylvan men was large. It was walled with ice, so that men could not wander away to the north pole or to the south pole; but between these frozen regions the temperate and torrid lands were open. Before they learned to fashion stone knives, before they learned to use stone tomahawks, before they learned to use bone awls, before they learned to wear shell beads, before they learned to build shelters of boughs and bark and stone, — while yet naked animals, — men were found in every quarter of the globe. There were men on every shore, and there were men on the banks of every river. Sylvan men and women, boys and girls of the forest, dusky babes of the wood, were scattered throughout the whole habitable earth before the rudest human arts were invented, probably before organized languages were formed, and probably before institutions were organized. How do we know this is true? Is it the story of a romancer who finds the origin of the glacial drift in the lashing of a comet's tail? No, this conclusion is reached through the labors of an army of patient, earnest, keen-visioned investigators. They have found the birthplace of art not alone in one land, but in all lands. The vestiges of the crudest arts are found everywhere, and men began the career of artisans everywhere. It is found that men were already distributed throughout the world when they first began to use the simplest tools. Something more of interest is found. It is discovered that the time when the first art-culture began was long ago, — very long ago; not long when compared with the geologic history of the earth, but very long when compared with the book-recorded history of man. Archæologists have found vestiges of the beginnings of human art in geologic formations, and they have found them in all lands. So the "Garden of Eden" was all the world, and the sons of Adam were a host.

As time passed on from that ancient epoch when men had

landed on every shore, they slowly, very slowly, improved in their arts: for later and still later geologic formations contain vestiges of higher and still higher arts, until at last men could make pottery and weave garments and cultivate the soil; and from that time on, we have human industry recorded in books.

Early human history is recorded in the rock-leaved bible of geology; late human history is recorded in paper-leaved books of libraries. Let us take up the story of music as a human art at the time when the late history commences, for that will serve our purposes.

All the sylvan people of the world rejoice in dancing. So far as we know, it was the earliest of the æsthetic arts, for we find it highly developed at the very birth of all other fine arts. This is because its foundation is laid in the physical constitution of man: it is the expression of the joy of animal life. These sylvan men danced by firelight, and forever they varied the rhythm of their dances with short steps and long steps, with steps to the right and steps to the left, with steps forward and steps backward: so dances came to be composed of a succession of varied steps, so rounded as to make a complete number in a figure of motion. A figure of motion, a complement of steps, is repeated over and over again, and the voices of the dancers are trained to chant the rhythm to guide their feet in the dance. To mark the varied steps to each complement or theme of motion, the voice is varied: long notes and short notes are used, and then loud notes and soft notes; and yet there is nothing but rhythm. Then they begin to vary their voices as a guide to the moving feet by changing the vocal pitch, and the simple chant becomes. First, the voice varies only in time; then it varies in time and stress; then it varies in time and stress and pitch, and the chant is almost a melody. So the music of the lowliest men known to modern investigators is but rhythm. It is the universal music. All music in all times is based on rhythm, but some music has more than rhythm. The music of the savage has been improved. The sylvan man developed the first element of music to a high degree.

At this stage the chant of unmeaning syllables undergoes change, for the emotions that are kindled by the dance are expressed in words, — first a few simple expressions of emotion, mere interjections, then exclamatory phrases, then exclamatory sentences, and the egg of poetry is laid.

This embryonic poetry is devoid of rhythm; for the rhythm yet belongs to the voice, not to the literature. The rhythm does not grow out of the words of the chant, but the rhythm of the chant is imposed on the words.

The stage of culture of this sylvan man is called "savagery;" and it is very long; and during all these centuries, and centuries of centuries, tribes of kindred men dance and chant. At the foot of the glaciers they have their homes, and walls of ice echo their chants; by mountain crags they have their homes, and the rocks echo their chants; in the valleys they have their homes, and the savannas are filled with their chants; in tropical forests they have their homes, and "the sounding aisles of the dim woods" ring with their chants.

When sentences are used to express the emotions kindled by the dance, the leader repeats the words and the people chant the refrain; and more and more he gains a freedom in composition, and he varies his chant with new sentences, iterating and reiterating the emotional theme. In this way poetry becomes, and we have dancing-master poets and dance songs. As the dancing-master poet varies his theme of poetry, so he varies his theme of music, and melody becomes. Poetry and melody are twins born of the dancing chant. Thus it is that "ring-around-a-rosy" becomes a song.

At first musical rhythm is an auxiliary of the dance: the rhythm of music and the rhythm of motion are partners. When unmeaning syllables are replaced by emotional words and sentences, music and poetry live together. Sometimes it is dancing and music only; sometimes it is dancing, music, and poetry altogether; sometimes it is music and poetry only.

So the grandchild of the dance and the child of the chant grows, and is emancipated from the control of dancing, and becomes an art associated with poetry. Priests sing as they perform religious rites, women sing as they grind at the mill, children sing at their

sports; and song, as rhythm and melody, exists during all the period denominated "barbarism."

When freedom comes to song, it starts on a new career. No longer chained to Terpsichorean feet, it soars into the realm of ideal emotion. The dance expresses the joy of exuberant life: the song expresses the joy of exuberant emotion. The dance carries the body through the merry maze: the song carries the soul on its way through the universe of thought.

If I would share my measure of joy with another, behold, my measure is still full, and more than full: it overflows. When song comes, men find, that, though the solo is beautiful, the chorus is more beautiful, and rapidly choral music is developed. At the time to which we refer there is no harmony, but only rhythm and melody. Yet the egg of harmony is laid, for in melody sounds follow one another rapidly, and ere one note leaves the ear another joins it. The waning sound mingles with the waxing sound as the embryo of harmony. Thus melody trains the ear to the appreciation of harmony.

There is still another element of harmony in choral melody. The voices of a varied concourse of people are diverse in pitch. The notes of man are low and resonant, like the voices of waves and winds; the notes of women are high and clear, like the voices of birds; while children pipe like bees. In folk-singing, groups of such voices unite, and the elements of harmony are developed. The village life of barbarism when the people form a body of kin and kith promotes this rudimentary harmony; for they meet as one great family, and join in many a festival that must ever lead to music and dancing.

And here another art assists in the development of music. The drama begins in savagery. The savage deifies the beast. To him the animals of the world are wonderful.

The eagle lives a life with which he cannot vie. It plays among the clouds, rests on the mountain-tops, and soars down to circle over the waves of the sea. The humming-bird poises over its blossom-cup of nectar like a winged spirit of the rainbow. The deer bounds away through the forest, and leaves the hunter lost in amazement. The squirrel climbs the tree, and plays about among its branches, and springs from limb to limb and tree to tree, and laughs at the sport. The rattlesnake glides without feet over the rocks, and in his mouth the spirit of death is concealed. The trout lives in the water, and flies up the brook as the hawk flies up the mountain. Dolphins play on the waves as children play on the grass. The spider spins a gossamer web; the grub is transformed into a winged beauty; the bee lays away stores of honey; the butterfly sports in the sunshine like a flower unchained from its stem. The air, the earth, and the waters are peopled with marvellous beings.

The folk-lore of the savage is a vast body of oral literature, in which these wonderful animals are the principal actors, and his book of creation is the history of the animal gods. The stories of these animal gods are dramatized; and the priest-doctors of savagery are the actors who play before the people, assuming the parts of beast gods. For this purpose they dress themselves in the skins of beasts, or wear masks that represent the forms and attributes of their deities. In recitations and dialogues, with much acting and mimicry, they represent the scenes of their mythology to the people. When poetry is born, they recast their stories in poetic form, and chant and sing their verses.

Drama plays a great part in savage and barbaric life. In the tales of the drama the philosophy of the people is embodied. It contains their history of creation. The human mind is ever interested in the origin of things. The desire to know is the fundamental impulse of the intellect. The wisest and best of all peoples, even among the tribes of sylvan men, devote their highest intellectual powers to the enigmas of creation; and as opinions are formed, they seek to teach them to others. Thus it is in savagery and barbarism that philosophy is embodied in drama, and taught to the people. In primitive society the drama is the school of religion; for there its precepts are taught, and its lessons are reflected in the theatrical mirror of life. The drama is deeply embedded in early culture, and is intimately associated with the intellectual growth of the race.

When the drama borrows aid from music, music itself is greatly

invigorated. With the new impulse it rapidly develops, and this is the manner of its growth:—

When the chorus is sung by skilled performers, the unskilled join in parts, adding a kind of refrain to the music, not by following the undulations of the melody in unison with the principal singers of the chorus, but by chanting on a note in harmony therewith; and thus harmony becomes.

To suit the conditions of the actors in the drama, harmonious parts are developed until one, two, or more accessory chants are produced; then these harmonious parts are developed from accessory chants to accessory melodies, more simple than the principal melody, which still retains the name.

In the music thus developed by our race there are usually four parts,—soprano, contralto, tenore, and basso,—and these are adjusted to four classes of voices.

Rhythm grows into melody, and melody grows into harmony: yet music is young, and music must grow, for it blossoms with the promise of becoming divine. Music is to become symphony. Harmony is a combination of co-existent melodies; but symphony in its broadest sense is a combination of sequent harmonies. At the song stage of music, men begin to recite stories, simple dramas, and intersperse their narratives with stanzas of song; then the narratives are chanted, and songs and chants are combined, chants and songs alternating. At this stage a body of sacred music is developed. From hymns grow anthems, and Bible passages are rendered in the solemnity of the chant and the majesty of the hymn, for chants and hymns alternate; and anthems by minute increments become oratorios, where Bible history is taught in a succession of chants and hymns, changing along the course of the oratorio to express the varied emotions kindled by the sacred story. The mythic drama of the Pagan world is represented by the oratorio of the Christian world.

The profane dramas that are recited and sung come to be chanted and sung with instrumental accompaniments. And then are produced the cantatas, or poetic stories set to music; and fugues, or musical dialogues, are composed; and nocturnes, serenade music laden with tender love. Then the cantata is developed into the opera as the drama is wholly set to music and the parts presented by *dramatis personæ*.

Men must laugh sometimes, for tragedy must be set in comedy, as precious stones are oftentimes set in filigree; and so the madrigal is developed, which is an elaborate musical composition of many parts, designed for the expression of tender and hilarious joy in alternating movements: it is the comedy of music. And then comes the sonata, designed for solo instruments,—a musical composition usually of three or more successive parts, each of which has a unity of its own, yet all so related as to form one varied and consistent whole. From the sonata, music passes to the symphony, which is a musical composition of successive parts having slightly varied but intimately related movements, treated in such a manner, by varying the time and stress and pitch, as to produce the greatest contrasts. With the anthem and oratorio, the cantata and the opera, the fugue and the madrigal, the sonata and the symphony, music has reached its highest stage in civilization.

The theme is the evolution of music, not the evolution of musical instruments; but something must be said of instruments, for they play an important part in the evolution of music itself. Were I to enter upon this theme fully, the task would be great. Then I should have to tell of thumpers of many kinds, by which the rhythm of the dance is controlled; I should have to tell of rattles, by which the dance is enlivened; and I should have to tell of whistles, by which the dance is made merry with screams. Then I should have to tell how thumpers became drums, and how rattles became tambourines, and whistles became flutes; and I should have to tell how twanged flexible strings became violins, and how twanged rigid strings became pianos, and how bark whistles became horns, and how pipes became organs.

The invention of musical instruments begins with the sylvan man, who uses them to mark the rhythm of the dance. Throughout savagery and barbarism only time-marking instruments are invented. Not till civilization came to the people of the shores of the Mediterranean were instruments of melody produced; but

when they appeared, a new world of music burst upon the delighted ears of civilized man. Beaten instruments, reed instruments, wind instruments, and stringed instruments give power and variety, and the capacity for musical production is marvellously increased. Men can sing solos, sing in chorus, and sing in parts within the compass of the human voice; but with instruments they can play in unison with like instruments, and in harmony with unlike instruments, and with a compass far exceeding that of the voice. Then music is enriched by increasing the compass, it is enriched by increasing the volume, but more than all it is enriched by increasing the variety of its kinds. At this stage music is sweet, music is grand — but music must become sublime.

Instruments of music are but instruments of melody until science comes, when it is learned that sound is a mode of motion, and that low sounds are slow vibrations, and high sounds quick vibrations. Then the knowledge comes by which man invents instruments of harmony, — co-existent harmony and sequent harmony. Thus science is the last great agency in the evolution of music, for it produces instruments by which symphonies become possible, and music has reached the sublime.

As the blue egg becomes a robin, as the seed becomes a *Sequoia*, as the sands of the rill become an island, so "ring-around-a-rosy" becomes a symphony.

Primarily feelings arise from biotic pains and pleasures. It is one of the wonderful transformations of nature that the pain of a blow should slowly, through the years of human culture, develop into the sorrow for sin; that the pleasure of a feast should evolve by the metamorphosis of minute changes into the love of justice. How feelings develop into emotions, and emotions into sentiments, and sentiments into æsthetics, is a long and beautiful story which cannot here be told. But the world is full of transformations. The metamorphoses of evolution have been the mysteries of time. In the solution of these mysteries, men have been engaged through untold years, — peering through their purblind primitive ignorance for more light, reasoning with guesses, philosophizing with myths, and believing in errors, but gaining a little truth here and a little there, until by minute increments science has been developed. The evolution of science is itself the mystery of mysteries, the metamorphosis of metamorphoses, for the germ of science is mythology.

With the development of intellect, the emotional nature of man by which he loves and hates has been evolved, and the æsthetic pleasures have arisen under the law of mental association. By association with the joys of life, music has been endowed with its power of producing emotion. This association must be explained.

I have now spoken of the growth of music as a combination of sounds in succession and in harmony, as it is made by the human voice, and have alluded to the origin of the instruments by which parlor, orchestral, and temple music is produced; but nothing has been said of the means by which music is endowed with its power to produce emotion. I have told of the body of music, but have said nothing of its soul. Music is freighted with joy and sadness, with hope and fear, with courage and cowardice, with glory and shame: it is freighted with all emotion; and how does the form of sound become informed with feeling?

When primitive man — poor, naked, houseless, savage man — lived in the Eden walled by ice, and was scattered throughout the garden of the world, his capacities for pleasure were yet little developed. Still he joyed much in his rude way. When the wind blew cold, he warmed himself by the camp-fire; and when the night was dark, he illumined his home with fire-light; and about the fire he danced, and in the dance he had resource of joy. When the fisherman came home laden with a bounteous catch, he made merry by the fire-light dance; when the hunter brought in many pheasants or many antelopes, then, with kith and kin, he made merry by the fire-light dance; when the rich nuts fell from the trees in bounty, he made merry by the fire-light dance; when the wind blew chill, he drove the cold away by the camp-fire dance, and when the night was about him he rejoiced in dancing. So the nights of that region where the stars of the Great Bear are overhead, and the nights of that region where the stars of Orion are overhead, and the nights of that region where the Southern Cross

is overhead, in all the habitable lands of the round earth — the nights were spent in dancing, and the rhythm of the dance and chant became the language of these rude savage emotions.

But disease and wounds and pain and death were the heritage of this early man. Whence these evils came he knew not; why they came he could not tell. How they were to be driven away was the enigma of all savage thought. Through an illogical philosophy, the origin of which is a long and strange story, he came to believe that diseases were living beings; that toothache is the pain wrought by the gnawing mythic worms; that the cough is caused by mythic insects; that headache is caused by invisible mythic ants; and that all diseases and all pains are produced by these mythic agencies. And he tried to drive them away by shrill shrieks, by mad howling, and by horrid imprecation. Then he sought to gain the aid of the friendly spirits of the world, — the good mythic beings. To him the rhythm of the dance and the chant was the language of joy. So he sought to woo these friendly spirits by using this language of joy; and, when wearied with his own efforts at driving away the maleficent spirits, he turned to the dance and the chant, and with them called for the beneficent spirits. In this manner the sylvan man came gradually to believe in the direct efficacy of dance and music as a medicinal agency. Dance and music are the quinine and calomel of the savage, — the "water-cure," the "faith-cure," the "blue-glass cure," the "mind-cure," the "Christian-science cure," the "youth-restoring elixir," the panacea for all human ills.

When the poor diseased people recovered, the joy of recovery became associated with music. The welcome to health and companionship which the poor invalid received was given in dance and music.

Sometimes storms came and destroyed their rude houses; sometimes drought came and destroyed their harvests; sometimes fierce winds came and congealed their life-fluids; sometimes mad lightning came, and, shivering the trees, ended their lives. And so by flood and wind and lightning, and many other agencies, they believed themselves to be persecuted by the spirits of the animal gods who must be appeased; and what would please the god so much as music and dancing? And so they danced to their gods, and beat their drums to their gods, and played their whistles to their gods, and blew their horns to their gods, until the winds stilled, and the storms abated, and the lightnings went out, and the thunders hushed, and the floods ran away to the sea; and then they rejoiced with feasting and dancing and music.

Before the sylvan man had learned to plant fields, and build storehouses, and provide for future days, he believed that every thing was the gift of his animal gods. The earliest provision that mankind made for the future was to lay up a store of their good will. And how could he gain their good will but by dancing and music? So at new moons and at new seasons he held festivals in honor of his gods, and gave them dancing and music.

When, in a later culture, man gathered the fruits of the forest and mead as a store for the winter day, and planted fields and gathered grains, he made thanksgiving to his gods in dancing and music.

The rallying cry to war was dancing and music. There is an instrument used by savages in many lands that consists of a simple tablet of wood, a hand's breadth in length and a finger's breadth in width, to which a short string is attached by one end, while the other is fixed to a stick like a cane. The performer, holding the stick in his hand, whips the tablet of wood through the air in such a manner that it makes a sound, sometimes quick but low, like the whiz of a bullet on the battle-field; sometimes shrill and loud, like the shriek of a cannon-ball thrown into a bombarded city. With these instruments a group of naked savage warriors, intent on plunder, rapine, and the midnight murder of men, women, and children, gather about the camp-fire in the weird dance, and leap and howl and whip their bull-roarers, until they work themselves into a state of fury.

It was in this manner that the music was freighted with emotion by the sylvan man when it was only rhythm, and when it was chained to the dance.

Some music expressed in rhythm and melody has had a long life among all the barbaric and civilized peoples of the world. Min-



strels have carried it about ; men have sung their songs in field and forest ; women have sung their songs at the oven and the loom ; boys have sung their songs while driving the herds to pasture, and girls while milking cows ; and there are songs for all times and all conditions and all peoples. Song has ever remained as folk-music, the delight of the people.

There are songs celebrating all passions, — all joys and all sorrows, all hopes and all fears, all loves and all hates. All the emotions of the human soul are coined into song. Song is the reservoir into which all human feelings are poured, and it is the fountain from which all human feelings may be drawn. And this is true not only in our language, but in all languages.

When harmony was given to music through its association with the drama, musical compositions were no longer confined to simple songs for the field, the fireside, and the chapel, but great pieces were composed for the temple and theatre, and music was made to express the emotions of religion and romance, as in the oratorio, cantata, and opera. This music bore on its wings the hope of heaven and the fear of hell. It told of the joy of the angels before the throne of God, and of the torments of demons in the presence of the Devil. The profane music of this period related biographies and histories filled with love and revenge, virtue and crime, courage and cowardice, repose and tragedy. Music in this stage is freighted with the feelings that are kindled and expressed by laughter and crying, by prattle and wrangling, by caresses and blows, by kisses and frowns, by praise and reproof, by plenty and poverty, by strength and weakness, by health and disease, by birth and death, by festivals and funerals, by carnivals and battles, by peace and war, by victory and defeat, by justice and injustice.

And now we must speak of the symphonic stage of music, when science has given it a multitude of sweet instruments.

The art of music was not born of the music of Nature : it was born of the pains and pleasures, the joys and sorrows, of mankind.

The appreciation of the beauties of nature is of slow growth ; and it is only in civilization, and with the most cultured people of civilization, that these beauties are sources of joy ; and it is only in the latest music that the highest intellectual pleasures are expressed. The beauties of the earth, the sea, and the air and the sublime spectacle of the heavens, are gradually being wrought into the emotional nature of mankind ; and the new music is informed with the strains that are played by Old Ocean against the shores of every land. It is filled with the anthem-music of the forest, and the songs of the birds that chorus the round earth with the rising sun.

In its late history new attributes have been added from the contemplation of nature. These are feelings kindled by the higher intellectual activities. The human reason has acquired a knowledge of the universe, and derived exalted emotions therefrom. The boundless sea now tells its story. From arctic and antarctic lands navies of icebergs forever sail, to be defeated and overwhelmed by the hot winds of the tropics. The lands with happy valleys and majestic mountains rise from the sea, built by the waves and fashioned by fire and storm. Over all rests the ambient air, moving gently in breezes, rushing madly in winds, and hurling its storms against the hills and mountains of the sea and the hills and mountains of the land.

The land, the sea, and the air are the home of a world of life, which man studies with ever-increasing interest and pleasure. The solid earth is composed of crystalline forms, and exhibits chemical activities which ever challenge admiration. Sound and heat, and light and electricity, and vitality and mentality, present modes of motion the contemplation of which fills the mind with delight. Looking above the earth, the worlds of the universe are presented to view, and their wonders fill the soul. So music has come to be the language of the emotions kindled by the glories of the universe.

Thus is seen the growth of music in four stages, — music as rhythm, music as melody, music as harmony, and music as symphony. Rhythm was born of the dance, melody was born of poet-

ry, harmony was born of drama, symphony was born of science. The motive of rhythmic music was biotic exaltation, the motive of melody was social exaltation, the motive of harmony was religious exaltation, the motive of symphony is æsthetic exaltation. It is thus seen that music develops from the emotional nature of man, as philosophy has its spring in the intellectual nature. The earliest emotions arose from the biotic constitution, — simple pleasure or pain, as felt in the body and expressed in rhythm : they were mere feelings. Then feelings were idealized, and became emotions, and were expressed in melody ; then the emotions were idealized, and became sentiments, and were expressed in harmony ; then the sentiments were idealized, and became intellectual conceptions of the beautiful, the true, and the good, and these were expressed in symphony.

Is there a new music for the future ? The science of music answers, "Yes." We know that music has been chained to "form," and imprisoned in the Bastille of musical intervals, and guarded by the henchmen of mathematical dogmas. But a few great musical composers, like Wagner, have broken the chains, and burst the bars, and killed the jailers, and they sing their liberty in strains of transcendent music.

When it is desired to cultivate skill in musical performance, it is necessary to cultivate the art in the individual in the same order in which it is cultivated in the race ; and he must first master rhythm, then melody, then harmony, then symphony. Then the love for music must be acquired in the same order. No one can love a symphony or an opera who does not first love song. If you would love the higher music, you must love the songs of the people ; and to affirm that you love a symphony, or an opera, or a cantata, but that you do not love a song, is like averring that you love a garden but do not love a rose, that you love a bouquet but care not for a lily : for a symphony is indeed but a bouquet of melodies, and an opera is a garden of many flowers.

Happy is the home that is filled with song, where boys and girls sing the melodies of the people, and where they make these melodies more musical with the violin, the piano, or the flute ; for to music is consigned the purest joy.

#### NOTES AND NEWS.

IN addition to the election of Dr. Weir Mitchell as president of the next Congress of American Physicians and Surgeons, to be held in September, 1891, which we have already noticed, Dr. W. H. Carmalt of New Haven was elected secretary ; Dr. J. S. Billings of Washington, treasurer ; Dr. William Pepper of Philadelphia, chairman of the executive committee ; and Dr. S. C. Busey of Washington, chairman of the local committee of arrangements. Dr. C. H. Mastin of Mobile is reported to have declined the presidency, on the ground that no member of the executive committee ought to be elected to the presidency.

— The fifty-eighth annual industrial exhibition of the American Institute of this city is now in progress at the Institute building, on Third Avenue, between Sixty-third and Sixty-fourth Streets. The building is well filled with tastefully arranged exhibits, covering a wide range of industries, several in which manufacturing processes are shown being especially attractive and interesting. The electrical exhibits are not as numerous as might be expected, there being only three electric-light companies and a few manufacturers of electrical instruments represented.

— In view of the reports which have recently been published respecting the Johns Hopkins University, President Gilman authorizes the statement that the university will begin its next year on the 1st of October with unimpaired efficiency. Neither the salary of the president nor those of the professors have been cut down, and several new appointments have been made. The indications during the summer have pointed to the usual number of students, and the courses of instruction will be given as announced in the programme. As to the finances of the university, it is no secret that the income derived from the Baltimore and Ohio Railroad was cut off some time ago ; but the accumulated income of former years, the income from investments outside of the railroad, the income from tuition (which amounted last year to nearly \$40,000), are available. Besides all this, a number of generous persons have