



Visual aids in human progress.

Item Type	thesis
Authors	Albrecht, Ira Werner
DOI	10.7275/16139873
Download date	2024-09-23 06:32:45
Link to Item	https://hdl.handle.net/20.500.14394/46324

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VISUAL AIDS IN HUMAN PROGRES



ALBRECHT - 1948

VISUAL AIDS IN HUMAN PROGRESS

By

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A thesis presented in partial fulfillment of
the requirements for the Master of
Science Degree

University of Massachusetts

1948

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CHAPTER I

INTRODUCTION

CHAPTER I

INTRODUCTION

No human endeavor of whatever kind has ever sprung spontaneously into existence but has been a gradual development in the course of time. Through the years each leader in each field has contributed his little part toward the advancement of the whole endeavor. So visual education has come to its present status from time immemorial. Each educator along the long, hard path has given his own peculiar talent to the growth of what we now consider a modern phase in education.

It is true that visual education seems a modern development. The extremely rapid advances within the last half century in technical and industrial sciences have made possible mass production and therefore the wide dispersion of the variant types of visual aids.

The constructive, historical material written on this subject, however, seems not to have kept pace with the growth of the science itself. It is true, one finds many controversial magazine articles on the use of various forms of visual aids. One finds, too, many books, on different phases of this new teaching technique as it is used in American schools today. Of the early beginnings of this oldest form of education, however, one finds strangely little material which is available to the student of this subject. It will be the purpose of this paper to attempt to trace the development of visual education from its earliest inception to modern times.

Before going too deeply into a discussion of visual aids and visual education, it might be well to determine just what is meant by these words which have been used so glibly--and often so loosely--during the past two decades.

The "Dictionary of Education" defines a visual aid as, "Any device by means of which the learning process may be encouraged or carried on through the sense of sight, for example, silent motion pictures, photographs, stereoscopes, etc."¹

It will be readily seen that this throws any discussion of visual education back to the dawn of civilization, and so, as there are several thousand years to be covered in this short paper, only those years preceding the invention of moving pictures may be considered. This research, after tracing the development of visual education to the period of Comenius, will be confined largely to the schools of New England--schools which doubtless influenced educational movements throughout the United States and may be considered as indicative or representative of schools across the nation.

Much has been written in late years about the use of moving pictures in education and any further study of this subject would be redundant. This study will close, therefore, with the introduction of the moving picture as a visual aid in the classroom.

(1) Good, C. V., Dictionary of Education, p. 19

CHAPTER II

THE DARK AGES

CHAPTER II

THE DATE AIDS

Since time immemorial the task of leaders has been to transmit ideas to the mass and thus to raise it from the abyss of ignorance. Visual aids were used for educational purposes in the birth of civilisations. Story telling as a means of education was early considered too intangible in itself, and, even primitive man seems to have realized the dangers of verbalism.

In speaking of the work of Comenius, one writer says,

He may properly be called the father of visual education. And may we not name as the grandfather the teacher who first drew pictures in the sands of India, and as the great grandfather that paleolithic man who first began to build a picture language on stone before the dawn of recorded history?¹

Cave-paintings — Pictures chipped or painted by Cro-Magnon man in caves and caverns in various parts of the world thousands of years before the dawn of history may indeed easily have been the first attempts at a form of visual education. These pictures may only have been rude drawings of the animals known to the artist, but they may also have been used to acquaint other members of the family or tribe with their common enemy. Because the pictures are always of animals and frequently depict hunting scenes, it may be concluded they were primitive at-

(1) Ellis and Thorndoroug, Notions Picturata in Education, p.3

tempts to instruct the young in methods of hunting, and so may be considered the first step in the development of visual education.

The next step was the preservation of thought and speech in what we now know as writing and in the hieroglyphics of the Egyptians we have an excellent early form of visual education. Here was handed down to future generations all of the history of a people and the knowledge which they had acquired through the centuries of their national life.

Alphabet -- The various steps which led to the rise of an alphabet may also be considered as steps in the growth of the trend toward the use of visual aids in education. The slow progress in the development of writing--memory helps, picture writing, ideograms, phonograms, and finally letters in the alphabet--are all phases in the development of educational visual aids. Message sticks, wampum strings and belts, the abacus of the East and the counting board of the Greeks are all to be included in these early simple modes of passing on information by the use of the appeal to the eye.

Hebrew Symbols -- Long before the Christian era the Hebrew people used a form of visual education. We are all familiar today with the two lions--symbols of the tribe of Judah and the House of David. Equally familiar today are the shield of David, the six pointed star, the seven branched candle stick, and the tablets with the ten commandments--all of which were used to impress upon the Jewish people the tenets of their faith and the teachings of their religion.

Christian Symbols -- In the early days of the Christian church are found evidences of visual education. Early Christian instruction

was addressed largely to groups of uneducated peoples and to groups who spoke various languages. Symbolism was used, therefore, to teach the great message which the disciples were carrying to various far flung outposts of the then known world and those symbols are still familiar to us today.

In the first years of Christianity in Rome--those years which were to influence so decisively the development of culture if not even the whole civilization of the Western World--the new religion, through its mystical tendencies, led its followers to a life far removed from the practical world. The life in the catacombs further developed this tendency toward a mystical, symbolical treatment of religion.

It was the custom in the earliest ages of the church to keep knowledge of the more intimate mysteries of the Christian religion from the heathen and even from those who were being instructed in the new faith. A reflection of this practice will be seen in I - Corinthians III, 1-2, in which Saint Paul writes,

And I, brethren, could not speak unto you as unto spiritual, but as unto carnal, even as unto babes in Christ. I have fed you with milk and not with meat; for hitherto ye were not able to bear it neither yet now are ye able.²

(2) Bible - M. T. I Corinthians III, Verses 1 and 2

In order to keep the secrets of the faith from even its novices, the initiated resorted to symbols and many of these symbols such as the hand which represents the First Person of the Trinity, the special cross of St. Andrew, and the winged lion for St. Mark are still found in ecclesiastical architecture and ornamentation.

Conditions of persecution under which the faithful lived in the first centuries of Christianity led to the development of the tendency toward a symbolistic treatment of religious truths. Many Christian beliefs were veiled under various symbolic figures. From the earliest days no representation of the crucifixion is found, but the Good Shepherd carrying the sheep occurs frequently. The story of the Shepherd's care for his flock would appeal to the simplest mind among the converts but would not attract the attention of the pagan persecutor. The banquet scenes with fish and bread in the catacombs spoke of the communion table to the early Christian but seemed a harmless decoration to the Roman who was accustomed to associating banquets with the dead. So we see that through symbols the early Christians employed a crude form of visual education to teach their religion to the simple people of the period. The very fact that these symbols are still found in our churches today speaks of their efficacy.

Quintilian -- Quintilian, famous for his "Institutes of Oratory", realized as did few thinkers of his time the necessity of beginning the education of youth as early as possible. This educator who lived in the first century after Christ recommended using letters of ivory which children would come to know by handling them and naming them.

I do not disapprove, however, the practice, which is well known, of giving children, for the sake of stimulating them to learn, ivory figures of letters to play with, or whatever else can be invented, in which that infantine age may take delight, and which may be pleasing to handle, look at, or name.³

He also advised using wooden tablets on which the characters had been traced by cutting and taught that children should learn to write by running their fingers over these engraved letters.

But as soon as the child shall have begun to trace the forms of the letters, it will not be improper that they should be cut for him, as exactly as possible, on a board, that his style may be guided along them as along grooves, for he will then make no mistakes, as on wax (since he will be kept in by the edge on each side, and will be unable to stray beyond the boundary) and, by following these sure traces rapidly and frequently, he will form his hand, and not require the assistance of a person to guide his hand with his own hand placed over it.⁴

Surely this is the first recorded use of the kinesthetic method.

(3) Quintilian, Institutes of Oratory, p. 15

(4) Ibid., p. 15

St. Jerome -- It was St. Jerome who, in his "Letters to Laeta on the Education of her Daughter, Paula," wrote,

Put into the hands of Paula letters in wood or in ivory and teach her the names of them. She will thus learn while playing.⁵

In spite of all his piety which today seems so foolish and ignorant, St. Jerome seems to have had here a thought which is truly modern.

Mystery Plays -- The mystery play, one of the earliest forms of drama, is also one of the earliest forms of visual education. These mystery plays grew up in the church and were used by the clergy to instruct the people who could not read.

Brander Matthews in his "Development of the Drama" tells us,

The Christian church had so arranged its calendar that every one of the chief events in the career of Jesus was regularly commemorated in the course of the year. Its liturgy was rich in symbolism; and as the ritual was not everywhere uniform, opportunities were frequent for suggestive variations devised by the devout priests, who were diligently seeking the means by which they could best bring home the central truths of religion to a very ignorant congregation. In many churches, for example, the crucifix was removed from the

(5) Compayer, Gabriel, History of Pedagogy, p. 67

altar on Good Friday and borne to a receptacle supposed to represent the sepulcher, whence it was taken on Easter morning to be restored solemnly to the altar, in testimony of the Resurrection.⁶

Later these plays became more elaborate and were taken over by the various trade guilds who enacted them in the streets. Used as a means of popular religious instruction these crude thirteenth and fourteenth century dramas were undoubtedly the forerunners of our present day educational motion pictures.

So we have traced the development of visual education from the dawn of history through the dark ages and are now ready to see what changes the Renaissance may bring to this particular form of education.

(6) Matthews, Brander, Development of the Drama, p. 114

CHAPTER III

THE REFORMATION

CHAPTER III

THE ILLUMINATION

Printing -- In the days before the invention of printing it is not to be wondered that visual education made little progress. When each book took many years to copy by hand, and when reading and writing were left to monks and to slaves or to poorly paid clerks, there was little incentive to learn to read. Visual aids in education, therefore, were not deemed necessary.

The use of wood cuts and the further invention of movable type, however, brought about a revolution in the world of knowledge and after the first printing of the Bible in 1475 we find education making rapid strides in Europe.

Side by side with the forward march of educational methods went the steady increase in the use of visual aids. In a day when there was some incentive to learn to read it is not strange that we find educators turning their attention to better methods of teaching this skill to children.

Trassius -- Trassius with all his kindly views and opinions on educational practices never to have resorted to methods which would today be classed under visual aids. He did, however, praise the habit of the ancients who "moulded tongue-dainties into the form of the letters and thus, as it were, made children swallow the alphabet."¹

(1) Comyns, Gabriel. History of Pedagogy, p. 90

That this advice was taken by the Dutch would seem probable for in her "Child Life in Colonial Days" Alice Morse Earle tells us, "I have seen in New England what were called CROWN BOOKS which were of heavy wood, incised with the alphabet, were of ancient Dutch manufacture, and had been used for making those HONOLULU horn books."²

Rabelais -- Rabelais in the complete system which he worked out so meticulously departed from scholastic formalism in turning to realism and there shows an early evidence of the rise of tangible aids in teaching. Certainly in the study of physical and natural sciences Rabelais evidenced a trend toward visual education by turning the eyes of his pupils to the pebbles on the shore, to trees and plants, to the store of the silversmith, to foundries and to shops of all kinds.

Gargantua -- Under the disguise of a fanciful tale Rabelais gave to the world a new system of pedagogy in his story of the education of Gargantua. This satire on the old methods of education as compared with the new humanistic methods gives the philosopher an excellent opportunity to ridicule the old and promote the new. Here may be seen the trend toward the use of visual aids in the care with which the pupil's powers of observation are developed. Rabelais tells his readers:

In returning they considered the face of the sky,
if it was such as they had observed it the night
before, and into what signs the sun was entering,

(2) Earle, A. M., Child Life in Colonial Days, p. 124

as also the moon for that day.³

Again when Gargantua eats his dinner his tutor makes use of visual aids. "They began," writes Rabelais,

To discourse merrily together, speaking first of the virtue, propriety, efficacy and nature of all that was served in at that table; of bread, of wine, of water, of salt, of fleshes, fishes, fruits, herbs, roots, and of their dressings.⁴

Later Gargantua was taught his mathematics in a novel way.

This done," says Rabelais, "They brought in cards, not to play, but to learn a thousand pretty tricks and new inventions, which were all grounded upon arithmetic.⁵

When it was full night before they returned themselves," says Rabelais, "They went unto the most open place of the house to see the face of the sky, and there beheld the comets, if any were, as likewise the figures, situations, aspects, oppositions, and conjunction of both the fixed stars and planets.⁶

We may conclude from this brief survey of "Gargantua" that Rabelais

(3) Rabelais, Francois, Works Volume I, p. 176

(4) Ibid p. 177

(5) Ibid p. 178

(6) Ibid p. 182

rebelled against the irksome routine methods of the Middle Ages and wished to introduce a form of visual education in pedagogy.

Montaigne -- Montaigne, bringing to the field of education a more humane attitude and a finer code, leaned toward a more informal and intuitive form of instruction. He may not have realized that he was contributing to pedagogy the first step in a definite trend which would not be developed until some three hundred years after his time, but certainly he had the fundamentals of visual education in mind when he wrote his essay, "On the Education of Children."⁶ In this conservative writer we hardly expect to find any hint of visual education as we now know it, but Montaigne undoubtedly realized the wisdom of teaching by visible objects. He also appreciated the value of observation for in this essay he says,

Let an honest curiosity be suggested to his fancy of being inquisitive after everything, and whatever there is of singular and rare near the place where he shall reside, let him go and see it; a fine house, a delicate fountain, an eminent man, the place where a battle has been anciently fought, and the passages of Caesar and Charlemain.

It is easy to trace, therefore, in the early days after the invention of printing the essential recognition of the value of visual materials.

(6) Montaigne, Michael, Essays p. 126

CHAPTER IV
PROTESTANTISM

CHAPTER IV

PROTESTANTISM

Protestantism -- The rapid spread of Protestantism in the Sixteenth century led to a complete reform in the fundamental principles of education in many countries. The Reformation, placing the responsibility for salvation on the individual and giving the Bible into the hands of the layman, was responsible for this revolution. Instruction in reading now became necessary for the faithful, and Protestant nations began to lay emphasis on primary schools.

The world was now ready for the work of the man who gave impetus to the first use of visual aids in education.

Comenius -- It was at this time that Comenius wrote his "School of Infancy" which was a guide for mothers in the training of children during the first six years of their lives. Forced to flee from his home during the persecutions of the Thirty Years' war, he lived in Poland, in Holland, in England and in Sweden, and hence influenced education in all of these countries.

Comenius, believing that the idea should precede the word, was destined to bring many reforms to education--reforms which were far ahead of his time and which were not fully appreciated until more than two centuries later. His theories are found in his "Great Didactus", written in 1630, and in his "Janua Linguarum", written a year later. It is for his "Orbis Pictus", however, that Comenius is of interest to the student of the history of visual aids in education.

Orbis Pictus -- "Orbis Sensualium Pictus" was written by Comenius

in 1658. It was his "Janua" embellished with pictures which would represent to the child the things which he hears spoken about as fast as he learns their names. Archaic and quaint though it may be, this book was a distinct step in the right direction and still stands as one of the milestones along the difficult road of pedagogy.

"Instruction," says Comenius in his preface to the "Orbis Pictus", "Will be clear, and by that, firm and solid, if whatever is taught and learned be not obscure or confused, but apparent, distinct, and articulate as the fingers on the hand."¹ This certainly has a modern sound. Further on in the preface we read, "Now there is nothing in the understanding which was not before in the sense," and further still, "To entice witty children to it, that they may not conceit it a torment to be in school, but dainty fare. For it is apparent that children (even from their infancy almost) are delighted with pictures, and willingly please their eyes with these lights, and it will be very well worth the pains to have once brought it to pass, that scarecrows may be taken away out of wisdom's gardens."²

The "Orbis Pictus" which has been called the "Children's First Picture Book", taught things and words together. Lessons were given in German and Latin and each was illustrated with a wood or copper cut. Every subject fit for the consideration of children was included and this first use of the intuitive method became so popular that the book

(1) Comenius, J. A., Orbis Pictus, XIII.

(2) Ibid, XV

was soon translated into English.

In writing of the knowledge of psychology which Comenius displayed in his "Orbis Pictus", Will S. Monroe says, "Who can say that Comenius was altogether ignorant of the psychological law that the power of the will over the attention of little children is largely a matter of automatic fixation, depending upon the attractiveness of the objects that affect the senses?"³

In the light of present day educational practices it becomes increasingly simple to trace the influence which Comenius had not only upon his contemporaries but also, in an indirect way, upon later educational reformers.

The ideas first definitely formulated by Comenius are reflected in the work of Rousseau, Basedow, Pestalozzi, Herbart, and Froebel, but we shall consider here only the aspects of visual education which these later reformers copied from, or which were suggested to them, by Comenius.

Rousseau -- Sense training, fundamental in the scheme of primary instruction which Comenius promulgated, was also stressed by Rousseau. Rousseau was undoubtedly familiar with the writings of Comenius as his "Emile" shows so plainly.

"In general," he says, "Never show the representation of a thing unless it be impossible to show the thing itself; for the sign absorbs

(3) Monroe, Will S., Comenius, p. 138

the child's attention, and makes him lose sight of the thing signified."⁴ In criticizing the methods of teaching geography used in his time, Rousseau further says in "Emile", "The two starting points in his geography shall be the town in which he lives, and his father's house in the country. Afterward shall come the places lying between these two; then the neighboring rivers; lastly the aspect of the sun, and the manner of finding out where the east is. This last is the point of union. Let him make himself a map of all these details; a very simple map, including at first only two objects, then by degrees the others, as he learns their distance and position. You see now what an advantage we have gained beforehand by making his eyes serve him instead of a compass."⁵

Again, in speaking of what we have come to know as sense perception, Rousseau says in "Emile", "In this outset of life, while memory and imagination are still inactive, the child pays attention only to what actually affects his senses."⁶

So it is seen that, although Rousseau may not have offered so many practical suggestions in the use of visual aids as did Comenius, he certainly was influenced by Comenius in that he, too, appreciated the value of appealing to the senses in educating children.

(4) Rousseau, Jean J., Emile, p. 28

(5) Ibid, p. 129

(6) Ibid, p. 26

Basedow -- Johann Heinrich Basedow, whose methods were based on the principles of Comenius, urged the use of common objects in teaching. He also saw the need of appropriate textbooks and in his "Elementary Book with Plates" prepared a volume which contained his complete scheme of education. Of this book Paul Monroe says, "It was the first step since the time of Comenius to improve the character of the work of the school through the preparation of appropriate textbooks and the radical revision of subject-matter of school work."⁷

Although Basedow seems to have had such excellent pedagogical theories, the school which he founded at Dessau in 1774 was abandoned in less than twenty years. This school was never successful, largely because it was purely secular, a new idea, and more because too many subjects and courses were attempted. Basedow's own personality did much to thwart the realization of a concrete demonstration of visual education.

In his school Basedow taught with pictures of man and animals, with trees and plants, with minerals and chemicals, with mathematical instruments, and with pictures which would serve to show the course of history. This form of instruction, based as it was on sense perception, serves to show both the influence of Comenius on Basedow and the growing trend toward the use of visual aids.

Pestalozzi -- Like Comenius, Pestalozzi advocated leaving the child with its mother for the first few years of its life. In entrusting the

(7) Monroe, Paul, A Text-book in the History of Education, p. 579

early education of the child to its mother, Pestalozzi stressed the necessity of visual aids. In his "How Gertrude Teaches Her Children" he writes, "We must not reason with children, but must limit ourselves to the means of developing their minds by ever widening more and more the sphere of their sense-impressions."⁸

In this same book he speaks of the "need of picture books for early childhood" and the "need of a guide to names, and knowledge of words founded upon these books and their explanations, with which the children should be thoroughly familiar before the time of spelling."⁹

It is also in "How Gertrude Teaches Her Children" that Pestalozzi wrote, in speaking of a teaching method, "The most essential point from which I start is this: - Sense impression of Nature is the only true foundation of human instruction, because it is the only true foundation of human knowledge."¹⁰

Again in "Leonard and Gertrude" Pestalozzi shows clearly how he was following in the footsteps of Comenius when he writes,

The instruction she gave them in the rudiments of arithmetic was intimately connected with the realities of life. She taught them to count the number of steps from one end of the room to the other, and

(8) Pestalozzi, J. H., How Gertrude Teaches Her Children, p. 67

(9) Ibid, p. 68

(10) Ibid, p. 316

two of the rows of five panes each, in one of the windows, gave her an opportunity to unfold the decimal relations of numbers. She also made them count their threads while spinning, and the number of turns on the reel, when they wound the yarn into skeins. Above all, in every occupation of life she taught them an accurate and intelligent observation of common objects and the forces of nature."¹¹

Another step had been reached by Pestalozzi in actually presenting to his pupils experiences which led them from the known to the unknown-- a definite step ahead in the use of visual aids in education.

Froebel -- Although Comenius influenced many of the educators who followed him, it is perhaps in the work of Friedrich Froebel that we find the ideas of Comenius best put to use. Most of the fundamental theories which Froebel gave to education may be found in "The School of Infancy" written by Comenius two hundred years before. Like Comenius Froebel believed in proceeding from the known to the unknown. Unlike Comenius, however, he advocated taking the child from its mother and putting him in the care of trained women teachers. The idea of women becoming trained educators outside of the home was then new, but in it may be seen the germ of the belief of Comenius--that women come closer to little children than do men.

The symbolism which Froebel introduced in his kindergarten system

(11) Pestalozzi, J. H., Leonard and Gertrude, p. 130

cannot be traced to Comenius. The early association with everyday things, however, and the actual participation of the child in the play which centers about the objects in the kindergarten can be traced to the teachings of the Moravian educator, even though many of these ideas may have come to Froebel indirectly through Pestalozzi. Surely here we see a practical application of the use of visual aids.

Herbart -- Believing that the correct use of the senses and the assimilation of facts in every field of knowledge should be the basis of elementary education, Herbart, following the path already indicated by Comenius, further stressed the doctrine of interest. His theory of sense perception, emphasizing as it did the necessity of forming a clear mental picture from which springs all our learning, certainly shows a clear trend toward the use of what we now know as visual aids.

In writing of the pedagogical value of trained sense perception he says, "Sense perception is the most important among the educative occupations of childhood and boyhood."

The more quietly, the more deliberately, the less playfully the child observes things, the more solid the foundation it is laying for its future knowledge and judgment. The child is divided between desiring, observing and fancying. Which of the three do we wish to have the preponderance? Neither the first nor the third; out of desiring and fancying originates the controlling power of whims and delusion. From observation, on the other hand, originates a knowledge

of the nature of things.¹²

In writing of the cultivation of sense perception through the study of mathematics, Herbart further says, "How to arouse and hold the attention is an important preliminary problem to all education."¹³ Doubtless we all agree that this is still true and that in his elemental use of visual aids Herbart was years ahead of his time.

Having traced the influence of Comenius to fairly modern times, we shall now consider a man who was born about fifty years after the birth of Comenius.

Fenelon -- Although he did not contribute to posterity any such early visual aid as the "Orbis Pictus" of Comenius, Francois de Salignac de la Mothe-Fenelon also recognized the necessity of objective teaching.

Through all of his writings on education but particularly in his "On the Education of Girls" is found an appreciation of the innocence of childhood and an inclination toward liberalism.

Fenelon, realizing how inattentive children are, realized also that the child's natural curiosity could become a potent auxiliary in teaching. In his "The Education of Girls" which he wrote for his friend, the Duchess de Beauvilliers and which was published in 1687, he says,

Children's curiosity is a natural bent that prepares the way for instruction: do not fail to avail yourself of it. For example, when they see a mill in the country and wish to know what it is, you should

(12) Herbart, J. F., A B C of Sense Perception, p. 137

(13) Ibid, p. 139

show them how the food that sustains life is prepared. When they see reapers, you should explain to them what the reapers are doing, how wheat is sown, and how it reproduces itself in the ground. In the city they will see shops in which various arts are being carried on and where different kinds of merchandise are being sold. You ought never to be annoyed by their questions; these are openings offered you by Nature herself to facilitate instruction: show that you take pleasure in them. By such a course you will insensibly teach children how everything that men use and that commerce turns upon, is manufactured. Gradually, without special study, they will learn the right way to make everything that is the true basis of economy. Such knowledge, which ought not to be despised by anyone, since all need to avoid being cheated in their expenditures, is chiefly necessary for girls.¹⁴

This consideration of the work of Fenelon and Comenius and of the educators who were later influenced by Comenius will serve to show how schools in Europe came to make more and more use of those classroom tools which we now know as visual aids.

(14) Fenelon, Francois, The Education of Girls, p. 24

CHAPTER V

COLONIAL NEW ENGLAND

CHAPTER V

COLONIAL NEW ENGLAND

In the late seventeenth and early eighteenth centuries various educators on the continent, following as we have seen in the footsteps of Comenius, were advocating a more kindly and philosophical approach to education.

Rousseau in his "Emile" was propounding his conception of the essential goodness of the child, and Fenelon was asserting his belief in the innocence of childhood. In England Locke, in advocating reasoning with the child, had even gone so far as to say that the child would not be spoiled if the rod were spared.

New England Schools -- This same period found an educational system of a far different type prevalent in America. The first schools which the founding fathers established in New England were as cold and as strict as were the doctrines of the Puritans who started them.

First School Law -- It is, of course, everlastingly to the credit of these Puritan settlers in a new land that they made early provision for the education of their children. Action was taken by the General Court as early as 1642 when the first school law of the Colony of Massachusetts was enacted. This law ordered the Selectmen of the towns to take account of all parents and masters respecting the education of their children in order that all children should be taught to read. The famous act of November 11, 1647, ordered that every township of fifty householders should appoint a teacher to teach the children to read and write, and that if the parents or masters of the children did not pay the school master, the inhabitants of the town would have to

assume the expense.

In his "Magnalia Christi Americana" which he wrote in 1702, Cotton Mather tells his readers that Comenius was at one time invited to become the President of Harvard College. Although this statement cannot be corroborated, it is, never-the-less, interesting to note that Mather calls Comenius "that brave old man Johannes Amos Comenius, the Fame of whose Worth has been Trumpeted as far as more than Three Languages (whereof every one is Endeighted unto his Janua) could carry it, was agreed withall, by our Mr. Winthrop in his Travels through the Low Countries to come over into New England and Illuminate this College and Country in the Quality of a President. But the Solicitations of the Swedish Ambassador, diverting him another way, that Incomparable Moravian became not an American."¹

One wonders what changes might have been made in the educational trend in New England had "that incomparable Moravian" chosen to become an American. Certainly the educational philosophy if it may be dignified with such a name, which existed then and at a later period in New England was as opposite as the poles from the kindly philosophy set forth by Comenius in his "Janua" and later in his "Orbis Pictus."

Primers -- There were in Europe in the years following the appearance of "The Visible World" several well-known and widely used illustrated school books.

Various primers, many of them illustrated with crude wood cuts,

(1) Mather, John, Magnalia Christi Americana, Volume 2, p. 13

were in use in England, and several ABC books were on the market there long before the Puritans came to America, but few of these seem to have found their way to New England. In fact there was little of what we now know as visual education and visual aids in the bleak New England schoolhouse of the seventeenth and eighteenth centuries.

The Dame School -- The Dame School, conducted by some needy widow in her own crowded kitchen, was usually the New England child's first school room. Here, with his toes squarely set on a crack in the floor, the small Puritan grasped his Horn Book in his cold, chapped, little hands and followed the Dame's knitting needle as she pointed to great A and little A.

The Horn Book -- The Horn Book was made up of a sheet of paper securely covered with thin, transparent horn and bound with strips of metal firmly tacked in place. There was a short handle by which the Horn Book could be held by the tiny scholar and in the handle was bored a hole through which could be passed a length of candle wicking or a leather thong. In this manner the Horn Book could be suspended about the child's neck as he trudged reluctantly to school.

At the beginning of the first line of letters at the top of the Horn Book as it was used in England appeared a small cross. This first line of the alphabet was known as the "Christ's Cross Row," or in the vernacular, the "Cris Cross Row." In the Horn Book used in New England this cross was often removed for, we are told of one Puritan minister who brought "a great Bundell of Horne Books with him and careful hee was (good man) to blott out all of the crosses of them for feare least

the people of the land should become Idolaters."² In this manner the first visual aid which might have been used in New England was wantonly excised from the meagre Puritan curriculum.

Below the rows of large letters at the top of the Horn Book appeared a row of small letters and below those was a collection of syllables such as ab, eb, and ib. These were followed by the Lord's Prayer.

If the little scholar were fortunate enough to own a Battledore he could learn his letters more pleasantly. A Battledore was simply a cardboard sheet folded over to make a little book, but it contained small cuts which illustrated the letters -- A for Apple, B for Bull and C for Cat.

Having learned his letters our little Puritan was ready to start down the lane to the school house at the cross roads.

New England School Houses -- The little red school house of bygone days has undoubtedly been highly overrated. Certainly there was little comfort or convenience in the New England country school of the eighteenth century.

Most school houses of this period measured not more than twenty feet long and ten feet wide. Other than the door and the wide fireplace there was usually no method of ventilation, for windows were scarce in those days. The children sat on rough benches which faced the wall on three sides of the room. Against each of these three walls was fastened a shelf which served as a desk. When the children recited they came to

(2) Ford, P. L., The New-England Primer, p. 51

the master who sat on a tall stool behind a high roughly made desk in the middle of the room.

Those children whose parents were provident in the matter of wood were allowed warm seats near the fire. Other less fortunate pupils stamped their feet to keep them warm near the drafty doorway.

There were no pictures, no black boards, and no maps in these crude buildings, but sometimes a globe might be found in a larger town school. Slates were unknown until about 1820 and the pupils did their writing with quill pens and home made ink in copy books made by stitching together large sheets of paper.

The principle duties of the school master in these old schools, if one may judge from prints of the period, seem to have been mending quill pens, setting copy in the copy books, and flourishing the birch rod. Punishments were many and varied and whipping posts were common in or near the school houses.

In such an unattractive school room one would hardly expect to find well illustrated text books or even the first of the illustrated books which we have seen were then in use in Europe. The book used as a reader throughout New England at this period was the New England Primer.

New England Primer -- It is probable that the first copies of the "New England Primer" were printed in Boston at some time between 1687 and 1690 by Benjamin Harris, a London printer who had fled to America to avoid political and religious persecution. Mr. Harris had previously printed "The Protestant Tutor," a small primer, in England. His

"New England Primer" followed the pattern of this older volume. It contained the letters of the alphabet, the easy syllables for children which are reminiscent of the ab, eb, and ib of the Horn Book, the Lord's Prayer and the Apostles' Creed. What is of most interest to the student of visual aids, however, is the collection of alphabetical rhymes, each illustrated by a crude wood cut. Many of these rhymes were changed with the years but the first little scholars in New England were entertained with such doleful thoughts as:

In Adam's Fall
We sinned all

The idle Fool
Is whipt at School

and

Time cuts down all
Both great and small.

Even more unhealthy in the light of modern mental hygiene was the awful picture of John Rogers, minister of the Gospel, being burned at the stake while his wife with nine small children and one at her breast watched the "Sorrowful sight." The fact that there were sometimes nine and sometimes ten children in the picture must have confused the little Puritans as they pored over practically the one and only illustration which ever fell into their hands.

This dreadful picture must certainly have been more interesting to the children than were the wood cut of the reigning sovereign which served as a frontispiece to the New England Primer and the "Shorter Catechism" and the "Dialogue between Christ, Youth and the Devil" which filled its last pages.

The tiny "New England Primer"--it never measured more than three by five inches and many copies are much smaller--with its almost indecipherable pictures seems a wretched school book to us today, but to a generation of children nurtured on John Cotton's "Milk for Babes; Drawn out of the Breasts of Both Testaments" and Wigglesworth's "Day of Doom," these little primers doubtless seemed very fine indeed. Little children who were told they might look forward to "The Easiest Room in Hell" were probably quite content with the crude cuts in their primers. Certainly these simple little pictures were all they had to cheer them on the long, hard road to learning.

The boy who learned to read his "New England Primer" was quickly hurried on to his Psalter, his Bible and a Latin grammar. Then he was ready to study with the minister and prepare for Harvard or Yale if he were planning a professional career.

Girls of the period seldom acquired more than the ability to read their Bibles and "Pilgrim's Progress."

As the three R's were the only subjects taught in these early schools, and as the New England Primer was the only illustrated text used, we may easily see that visual education did not make rapid strides in Colonial New England.

CHAPTER VI

LATE EIGHTEENTH CENTURY

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The closing years of the eighteenth century brought few changes for the better to the schools of New England, and if the schools of New England were poor, certainly those of the other new states were correspondingly dismal if not, indeed in a more pitiable condition.

This was a critical period in the history of our country and the general feeling of unrest and insecurity was reflected in the schools. Transportation and communication were poor, people who had suffered badly through many years of war were deep in debt, and the new government was weak and unstable. Illiteracy in the struggling new nation became common and there was no dream of free education. It is little wonder that this period saw few changes and practically no improvements in the trend toward visual education.

New England Primer -- As we have seen, the "New England Primer" was practically the only text book used for little children in the colonies. During the Revolution and after the new government had been established here, some changes were made in this little book. Paul Leicester Ford tells us in his "New-England Primer," "The printer was called upon, by the American Revolution, to change his frontispiece, and in 1776 the portrait of the Royal George was merely relabelled, and came forth as the Republican "John Hancock," the likeness between these two being, it is needless to say, very extraordinary considering that they were representatives of such opposite parties. In the Boston edition of 1777 a correct portrait of Hancock was achieved and in an edition printed in Hartford the same year a portrait of Samuel Adams,

another hero of the hour, was given. At the end of the Revolution, the standard portrait became that of Washington."¹

There were in existence at this time many other crudely illustrated little books among which may be mentioned "The London Spelling Book," Dilworth's "New Guide to the English Tongue," and "The History of Genesis." Wood engravings also embellished such little books as "The Death and Burial of Cock Robin" and "The Remarkable History of Tom Jones, a Foundling," but these can hardly be called text books and should not be considered as steps forward in the trend toward illustrated school books or the early development of visual aids.

More suitable for the category of early illustrated text books would be "The Young Child's A B C" published in 1806 by Samuel Wood of New York and illustrated with wood cuts. Numerous A B C books followed this early venture but beyond the primary grades the idea of illustrated text books seems not to have been considered.

Geographies -- Until after the Revolution only reading, writing and arithmetic were taught in the elementary schools. In 1784 Jedidiah Morse published his first geography but it was very different from the geographies with pictures and maps which were in use a century later, and entirely different from the geographies our children know today. Two maps--one of the world and the other of the United States--were the only visual aids in this first little geography.

A later geography, published by J. A. Cummings in 1814 advises the

(1) Ford, R. L., The New-England Primer, p. 104

teacher to "let the pupils always set with their faces towards the north. Trifling as this may appear, it is of great importance. Place the map of the world before them, and let them put their right hand on the letter E, the East side, and their left hand on the letter W, the West side."² This would lead us to conclude that by this time, in some schools at least, wall maps were in use.

This, then, was the condition of our schools at the turn of the century when the "New England Primer" and a few crude spellers were the only illustrated school books, if we may except a few geographies which contained not more than one or two maps. The democratic theory was not to be realized in education for many decades to come and so progress in visual education was as backward as was the progress of the educational system in general.

(2) Cummings, J. A., Geography, p. V

CHAPTER VII

EARLY NINETEENTH CENTURY

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EARLY NINETEENTH CENTURY

Rapid changes in living conditions took place in America during the first half of the Nineteenth century and these changes had their effect on education in the new country. Before we can trace the growth of visual education in this period, we must consider the many developments which transpired here after the turn of the century.

The New Order -- Transportation and communication were vastly improved in these years. Here we find canal travel, the first railroads, the new turnpikes, and the first steam boats. The West and the Southwest were being rapidly opened for settlement and the culture of the Atlantic coast states was being carried into new territory. Through easier methods of communication, barriers of distance were soon broken down and communities became more economically dependent upon each other.

Industrial conditions throughout the country were also changing rapidly. A nation which had been largely agricultural had become, by the introduction of machinery, a manufacturing nation, and the new social and economic order brought with it new social problems.

This new social order and the problems which it presented were responsible for the many humanitarian movements which were begun at this time, as well as for the rise of societies for world peace, the spread of missions, the teaching of temperance, and the improvement of the position of women.

Humanism -- Naturally all these changes brought changes in the school system throughout the country and we find the introduction of women teachers, infant schools, Sunday schools, a more humanistic

method of teaching, and an appreciation of the government's responsibility in the matter of public education.

European Trends -- It would, perhaps, be helpful to consider trends in European educational philosophy at this time. Pestalozzi, bringing an entirely new approach to the whole educational theory, had influenced such leaders as Herbert, Zeller, Fichter and Froebel who were carrying his principles from Switzerland into various other European nations. The swing away from the old established methods was well under way and the United States, as well as Europe, was to profit by this new conception of the science of pedagogy.

In England educators were too engrossed with the Monitorial System at this time to give much attention to the ideas which Pestalozzi was advocating on the continent. In Scotland, however, Robert Owen had established the first infant school at New Lanark and had introduced the idea of supplanting the private Dame School with the public elementary school. This practice soon spread to America, and brought innovations to the school system here.

Robert Owen -- Robert Owen inaugurated many of the Pestalozzian theories in his school at New Lanark. In "Angel in the Forest" Marguerite Young tells us,

The school building at New Lanark was a pleasant place, large, light and airy--an improvement over the best schools of that day. The classroom walls were decorated becomingly with representations of zoological and mineralogical specimens--quadrupeds, birds, fishes, reptiles, insects, many rocks, many shells. There

was a map of the world, each country a different color, and rational, when papery tariff walls should have broken down and when Russia should have found an outlet through the Arctic Sea, presumably.¹

Another attractive account of this school at New Lanark is found in "The Town of the Fearless" which was written by Caroline Dale Snedeker. She says,

On bright days the children were out-of-doors, on cold, rainy ones, in their lofty schoolroom. Around the walls of this, as a frieze, were pictures of animals, large and brightly colored; in front were two very large maps of the hemispheres on which no names were printed. Many 'natural objects' were in the room for the children to touch and handle and ask questions about. ... In the older school, from four years onward, geography was a game. One child pointed out the countries with a long stick, the one who first called out the right country had the next privilege of pointing. History was as a stream flowing before their eye; at least, being unrolled. For each country had its long strip of canvas which rolled up either end like a Greek scroll--red, blue or green scrolls--a color for each country. On each canvas were printed pictures of the greatest events, and a black line marked off the close of each century. Such were the inventions which Robert Owen thought out for his factory children.²

(1) Young, Marguerite, Angel in the Forest, p. 112

(2) Snedeker, C. D., The Town of the Fearless, p. 246

New Harmony -- Many of the best features of the school at New Lanark were brought to America when Robert Owen established here his community at New Harmony in Indiana. It is strange to find such a revolutionary pedagogical method first being introduced in the wilderness.

Mrs. Snedeker tells of the school at New Harmony in another chapter of "The Town of the Fearless." She writes,

In the midst of all this confusion the new Maclure schools were opened. The Harmonites saw the last speck of old-world dust fly out of the windows, symbolically and actually; for Madame Fretageot was a redoubtable housekeeper. Then, to their astonished gaze were presented a papiographic for teaching writing, an arithmometer for teaching arithmetic, a trigonometer--'by which the most useful propositions of Euclid are reduced to the comprehension of a child of five years.' Skeletons and wax figures for studying anatomy, globes and maps. ... Natural history was taught in these schools by the examination of actual objects. The children were encouraged to go forth into the field and find natural history specimens for themselves which would then become part of the Community collection.³

(3) Snedeker, C. D., The Town of the Fearless, p. 248

The most beautiful of the schools has always seemed to me the one contained in Maclure's home, the large two-storied brick house that had been Rapp's mansion. ... In the parlour was a table on which were outspread the precious pictures of all sorts which Maclure had gathered in Europe--lithographs, etchings, paintings in tempera from Rome. These, the pupils were encouraged to look at and handle in their leisure hours 'to cultivate their minds.' The aftermath of these pictures is still floating about New Harmony in old portfolios and garret chests. They were one of the chief inspirations of my childhood.⁴

It is only natural that the new psychological approach to education which had been reached by such men as Pestalozzi, Herbart and Froebel in Europe should eventually make radical changes in American education. As we have seen, it first made its impression felt here in Indiana, but the life of the new order was short there and the new educational idea was neither so quickly nor so easily accepted in New England. In 1825 when Bronson Alcott went to teach in Cheshire, Connecticut, he insisted that the school be supplied with a blackboard. This new fangled innovation, although it was paid for by the teacher himself, caused an uproar in the community and Alcott soon found himself out of a job.

(4) Snedeker, C. D., The Town of the Fearless, p. 248

Ernson Alcott — It is interesting to follow this gentle school master to his Temple School in Boston and read the account of this new venture in education which Elizabeth Peabody recorded so meticulously.

Miss Peabody writes:

Conceiving that the objects which meet the senses every day for years must necessarily mold the mind, he chose a spacious room, and ornamented it, not with such furniture as only an upholsterer can appreciate, but with such forms as would address and cultivate the imagination and heart.

In the four corners of the room, therefore, he placed, upon pedestals, busts of Socrates, Shakespeare, Milton, and Scott; and on a table, before the large Gothic window by which the room is lighted, the Image of Silence, 'with his finger up, as though he said, Beware.' Opposite this window was his own desk, whose front is the arc of a circle. On this he placed a small figure of a child aspiring. Behind was a very large bookcase, with closets below, a black tablet above, and two shelves filled with books. A fine cast of Christ in basso-relievo, fixed into this bookcase, is made to appear to the scholars just over the teacher's head. The bookcase itself is surmounted with a bust of Plato.⁵

(5) Peabody, Elizabeth, Record of Mr. Alcott's School, p. 13

The author goes on to describe the other pictures and statues in this unique school room and then tells of the students' desks.

The desks for the scholars, with conveniences for placing all their books in sight, and with black tablets hung over them, which swing forward when they wish to use them, are placed against the wall around the room, that when in their seats for study no scholar need look at another.⁶

Mr. Alcott's understanding of the value of visual education is clearly seen in what this author has to say of his method of teaching writing.

When children are committed to his charge very young, the first discipline to which he puts them is of the eye, by making them familiar with pictures. The art of drawing has well been called the art of learning to see. ... The forms of things are God's address to the human soul. ... With such education of the eye, as a preliminary, reading and writing are begun simultaneously; and the former will be very much facilitated, and the latter come to perfection, in a much shorter time than by the usual mode. ... In the course of a few days, tablets were placed at the desk of each child, on which were large forms of the letters; and they were encouraged to imitate them.⁷

(6) Peabody, Elizabeth, Record of Mr. Alcott's School, p. 14

(7) Ibid, p. 17

The school room in the Temple School certainly seems to have been in sharp contrast with the little New England school house in Chesire. Odell Shepard in his "Pedlar's Progress" gives us another interesting description of this school room.

One sees the tall Gothic window full of sunshine, the colored carpets, the busts of Milton, Shakespeare, Scott, Plato, and Socrates, behind the master's desk the bas-relief of Jesus,--so frequently referred to as a final arbiter of every moral discussion,--and the symbolic figure called 'Silence' near the window. Each scholar has his own desk, near the wall, and his own small blackboard.⁸

Certainly this is a far cry from the barren school house in which the young school master was not allowed to have a blackboard.

School Books -- Although the new approach to a more humanistic method of pedagogy made slow progress in America at this time, and although we must wait until after the middle of the century for the methods of Pestalozzi, Herbart, and Froebel to be introduced here, we do find many changes in the school books of the thirties and forties.

The "Old Blue-Back Speller" of Noah Webster was by 1829 embellished with a frontispiece and seven pictures, and later editions had a narrow cut at the top of each page of spelling words.

(8) Shepard, Odell, Pedlar's Progress, p. 167

Readers in these years became much more attractive with frequent illustrations. Among these may be mentioned "The Clinton Primer," named after De Witt Clinton and published in 1830, and Worcester's "Second Book for Reading and Spelling" published in the same year.

An interesting book was published by Gallaudet in Hartford in 1830. This was "The Child's Picture Defining and Reading Book."

It

Had a half page cut on every left hand page. Its author was evidently a man of much keener and more sympathetic pedagogic perception than most of the makers of school books and the plan of the book was quite interesting. The idea was to teach the meaning of the words through the language of pictures and each of the engravings in the first part of the book is accompanied by a list of the most prominent objects in it and with a few short, simple phrases. The cuts are repeated in the latter part of the book but this time the text that goes with each is a little story.⁹

Other readers which were popular at this time were "The American Juvenile Primer," 1838, Bentley's "Pictorial Primer," 1842, and Emerson's "Second Class Reader," 1833. These are all illustrated with numerous cuts.

(9) Johnson, Clifton, Old-time Schools and School-books, p. 247

Arithmetics -- The arithmetics of this period show a definite trend toward a more universal use of visual aids. Before 1800 children were usually taught to cipher by means of examples which the teacher set up for them in their copy books. The arithmetics which were published at the turn of the century were usually uninteresting little books with no illustrations, but the "Tutor's Guide," published in 1808, had little cuts which helped the puzzled scholar. By the late thirties many arithmetics for beginners were illustrated with attractive pictures and in the forties practically all arithmetic books were illustrated.

Geographies -- It is through the changes found in geography books of various periods that the development of illustrations in school books may be most easily followed. Until late in the first quarter of the nineteenth century, very little attention had been paid to geography in American schools. It is true, there had been globes in some of the more carefully equipped schools, but the child who attended a country school probably never was taught what we now know as geography.

As we have already seen, geographies published during the first quarter of the nineteenth century contained no pictures and often no maps. After 1820 many geographies were published and it would seem that these were intended more for the use of younger pupils than for older students as had been the case in the early volumes published by Jedediah Morse. The geographies of the period which we are now considering seldom included maps and the content would lead one to suppose that they were intended to be used with a globe or an atlas. The early atlases which accompanied these geographies were small and poorly printed and bound, and the maps seem ludicrous to us today.

The geographies of the eighteen-twenties, thirties and forties were illustrated with cuts which would do much to attract a child's attention to the text. The pictures in the geographies published by Samuel Griswold Goodrich--better known as Peter Parley--are particularly sprightly even if, to us, they may seem slightly unauthenticated. One wonders if the widely accepted belief that the Chinese eat rats and dogs may not have sprung from a crude illustration in a geography published by Peter Parley in 1839. The caption under the cut of a coolie carrying a pole from which dangle rats and dogs reads, "A Chinese selling Rats and Puppies for Pies."¹⁰ Peter Parley's "Malte Bran School Geography" is well illustrated and in 1845, when he published his "National Geography", this prolific writer printed it in the large, flat quarto shape more familiar to us today.

Academies -- It would not seem right to leave this period in the history of education in America without some mention of the academies which were so popular, particularly in New England, in the first half of the nineteenth century. In these academies many of the boys and girls who later became teachers received their only preparation for their work, boys were prepared for college, and girls were taught many of the skills which they would need when they became wives and mothers. It was in these academies, however, that geography and the first steps in science were taught. Here, then, we find one more phase of visual education in this period. Westfield Academy, founded in 1800,

(10) Johnson, Clifton, Old-time Schools and School-books, p. 356

may probably be considered as typical of such schools at that time. The earlier catalogs of this academy do not mention visual aids, but the catalog of 1824 boasts of "Chemical and Philosophical Apparatus."¹¹

So through the first half of the nineteenth century we have followed a trend toward a more modern method of education and have seen visual education make rapid strides. It remained for the invention of photography to usher in an entirely new era in pedagogy.

(11) Westfield Academy, Catalog 1824, p. 7

CHAPTER VIII

MIDDLE NINETEENTH CENTURY

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New Conceptions -- New conceptions of both democracy and education seem to have heralded the advent of the second half of the nineteenth century. Before considering the rapid strides made in visual education during this period, however, it might be well to view for a moment the educational picture in the United States at that time.

If any one period may be considered as outstanding in the history of education in the United States, it is those years which gave us such men as Henry Barnard, Horace Mann, James G. Carter, Calvin E. Stowe and Caleb Mills. Throughout the nation reforms in school systems were under way, and by 1850 we find a new order spreading all over the country. Through the second half of the century the principle of public school support was to be established in every state and various other forces were to be felt in every section.

It was at this time that we find the establishment of the first normal schools for the training of teachers as well as the founding of the first colleges for women. These institutions of higher education as well as the many magazines for teachers which came into being at this time were all to have their influence on the trend toward visual education.

It will be remembered that it was at this time that the influence of European educators began to make an impression on educators here and through normal schools and women's colleges as well as through the new pedagogical magazines these influences spread more

rapidly than could have been the case in an earlier period.

Photography -- The most potent factor in the development of visual aids in these years was undoubtedly the invention of photography. As photography developed in its technique, the cost of pictures was reduced and we find photographs used more widely in schools. In the period following the Civil War, every girl collected photographs of foreign scenes as avidly as our bobby-sockers collect photographs of screen celebrities today. Teachers early saw the value of these photographs of European palaces, famous places and beautiful sculpture and paintings. The pictures, exhibited to school children, were a great step ahead in the development of visual aids.

Photographs were, at that time, too expensive as well as too immature to be used as actual illustrations in school books. The readers of this period, however, show a definite improvement in illustration, for it is during these years that we discover the famous McGuffey Readers.

William Holmes McGuffey -- William Holmes McGuffey was born in Pennsylvania in 1800. His family settled in Ohio while he was still a baby and it was in the schools of this new territory that he received his early education. He attended Washington College in Pennsylvania and became a professor in Miami University (Ohio) in 1826.

"McGuffey's Pictorial Eclectic Primer" was first published in 1849. Of this book Harvey C. Minnich writes,

It was the Pictorial Primer that introduced the children to the earliest phases of visual

education. It contained 172 engravings, of boys 52, girls 32, dogs 26, cats 23, birds, toys, fruits, animals familiar and striking, games, childhood's dramatic scenes, thrilling adventure, and pious mothers and children praying to an all-seeing God. It was a veritable modernized Orbus Pictus.¹

The McGuffey readers enjoyed great popularity for there was need of new school books for that new era. The western states were being rapidly settled and in this new territory the need for education as well as for moral and ethical standards was keenly felt. McGuffey's love of children combined with his religious convictions and his appreciation of good literature made him the ideal book publisher for this growing country. His readers were used by generations of children and set a new standard for American school books.

McGuffey's readers were profusely illustrated. In "William Holmes McGuffey and His Readers," Harvey Minnich says,

Doubtless it is a bit of exaggeration to state that McGuffey possessed the prophetic vision to see that the modern child would be permitted daily to look through lantern slides and moving pictures upon all the wonders of the world.

... However, as pioneer in reader making,

(1) Minnich, McGuffey and His Readers, p. 33

McGuffey saw the value of pictures for children and was first to use these appeals copiously to interest his little readers.²

McGuffey seems to have known much of the psychology of childhood--much more, at least than had the educators who preceded him. His books are a far cry from the frightening pages of the "New England Primer" and from some of the first illustrated readers which followed it. In writing of the illustrations in these famous readers, Minnich tells us,

McGuffey introduces the children to his books through pictures of children alone learning from blocks or pictures or books, without the presence of sower dame or bearded master. Always these children pursue the learning of their own choosing under the shade of trees near their simple homes, often surrounded with pets and toys. Girls teach their dolls the alphabet and boys teach their friends to cipher, in unconscious anticipation of the Montessori method and the socialized recitation.³

Museums -- Education was considered one of the main reasons for the founding of many museums in the nineteenth century. The first museums in this country were founded in connection with various

(2) Minnich, William Holmes McGuffey and His Readers, p. 113

(3) Ibid., p. 114

colleges and universities. These had been preceded by gloomy storehouses which sheltered unattractive and highly technical collections of interest only to the thoughtful and learned scientist. During the nineteenth century, however, museums which were supported largely by public funds were opened throughout the country and these have become some of the best known institutions of their kind in the world. Among these may be listed the American Museum of Natural History, the Metropolitan Museum of Art, the Boston Museum of Fine Arts, and the Field Museum of Natural History. Education of the American people was the purpose of each of these museums and education has through the years continued to be their function.

School teachers were quick to see the value of trips to these museums for their pupils and this form of visual education made rapid progress in this period. Art galleries taught the children about the sculpture of Greece and Rome and about the famous paintings of Europe. The various civilizations of the far east were shown here. In museums children saw displays of minerals and metals, birds and butterflies and moths, stuffed animals and collections of historic interest. Trips to such museums were considered only as extra curricular activities at first but little by little we shall see the innovation of class visits and museum lectures. Here is undoubtedly one of the most clearly marked forward steps in the gradual movement toward nation wide visual education.

So we have seen the new trend in educational philosophy, and the institution of normal schools and women's colleges combine with the

development of photography and other new scientific discoveries to bring a new approach to pedagogy. With the closing of the nineteenth century we shall see how photography brought about the use of the stereoscope and the magic lantern and how these, encouraged by new educational theories, introduced the first faltering suggestion of our modern conception of visual education.

CHAPTER IX

THE LATE NINETEENTH CENTURY

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New Scientific Trends -- Scientific development made rapid strides in the late nineteenth century and these many new developments were responsible for the many radical changes made in visual aids during that period.

The importance of visual education seems to have been realized by practically all educators in the United States after the time of the Civil War. For over a century teachers had recognized the need for visual aids in various subjects but until technical developments and mass production methods were introduced, no rapid strides in the universal use of such aids had been made. Before this period all visual materials were made by artisans in their respective trades. With the dawn of the Twentieth century all this was changed and visual education of all types progressed as all things do when the product falls within the economic means of many. "The age of illustration is with us," wrote a contributor to "Education" in 1893, "And illustrate we must, if we expect to gain and to hold the attention of young and old."¹

Materials -- Great increase in the use of natural objects, pictures, maps, charts, models and various other visual aids is noticeable at this time.

When the teaching of science was included in the school curricu-

(1) Morsell, W. F. C., "The Lantern in the School", Education, XIII (May 1893) p. 558

lun, it became necessary to use actual materials for demonstration. Educators were quick to see the efficacy of these materials in the teaching of this subject and the use of such aids quickly spread to the teaching of other subjects. As objective teaching became more and more popular, the employment of these visual aids also became more universal. The wide use of laboratories in the period also spread the doctrine of visual education. School books of the time we are considering were profusely illustrated and, as school superintendents and boards of education began to demand and to receive more and more money for the purchase of necessary school materials, visual education was sanctioned by school boards and educators alike.

The Stereoscope -- The stereoscope, so popular in the parlors of our grandmothers and great-grandmothers, performed no small part in the steady forward trend of visual education. The invention of this optical apparatus which gave an impression of perspective and relief dates back to about 1832.

Its perfection for use in homes is credited to Oliver Wendell Holmes about the opening of the Civil War. It was some years later that the stereoscope and stereograph were introduced into schools as part of instructional procedure.²

In the stereoscope two photographs are shown at once--one to each eye--and are combined by the brain into one picture which has the effect

(2) Hoban, C. F., Visualizing the Curriculum, p. 149

of depth and distance.

Oliver Wendell Holmes -- In writing of the stereoscope as early as 1859 Oliver Wendell Holmes said,

Such are the stereoscope and the photograph by the aid of which form is henceforth to make itself seen through the world of intelligence, as thought has long made itself heard by means of the art of printing.³

In his recognition of the fact that photography would bring about an entirely new trend in education, Holmes was certainly prophetic. Of the future he writes,

What is to become of the stereoscope and the photograph we are almost afraid to guess, lest we should seem extravagant. But promising that we are to give a colored stereoscopic mental view of their prospects, we will venture on a few glimpses at a conceivable, if not a possible, future. Form is henceforth divorced from matter. In fact, matter as a visible object is of no great use any longer, except as the mould on which form is shaped. Give us a few negatives of a thing worth seeing, taken from different points of view, and that is all we want of it.⁴

(3) Holmes, O. W., "The Stereoscope and the Stereograph", Atlantic Monthly III, (June 1859), p. 747

(4) Ibid., p. 747

Mr. Holmes continues,

We are looking into stereoscopes as pretty toys, and wondering over the photograph as a charming novelty; but before another generation has passed away, it will be recognized that a new epoch in the history of human progress dates from (this) time.⁵

The Stereopticon -- It was in this period that lantern slides were first used in schools. Teachers, realizing that illustrations, reaching the brain through the eye, actually formed a perception far more clear than any verbal teaching might make, were eager to make use of this new educational aid. One writer says,

No one can predict the limits of education through this wonderful advance in photography, and no one can deny the immediate expediency of adopting such an auxiliary in the schools.⁶

Another educator, writing in "School Review" in 1902, tells us,

We remember not words but objects. We recall not descriptions, but the images derived from descriptions. ... Talk for half an hour giving purely a verbal description of the Parthenon--how clear an idea does your average pupil have of it? Show him a picture; call his attention to various points;

(5) Ibid., p. 748

(6) Morsell, W. F. C., "The Lantern in the School", Education XIII, (May 1893), p. 559

then his knowledge chrySTALLIZES, and he has an image that he will retain for years. Therefore, whatever increases the stock of clear-cut images in our pupils' minds must be of great aid in extending their knowledge and in kindling interest. For this purpose no other one thing can equal views shown with an optical lantern.⁷

The author goes on to explain that because the lantern is used in a dark room, there are no distractions for the pupils, and because the eyes of the whole class are focused on the same thing at the same time, the teacher can be fairly sure of attention.

From these articles it will be seen that educators appreciated the value of the psychological function of illustration by projection in the learning process at this time and that they were urging its universal use. Technical difficulties in projection were the greatest stumbling blocks to the advancement of this method at this period and we find many articles in teachers' magazines as well as in scientific magazines dealing with ways and means for overcoming these difficulties. The age of illustration was, indeed, with us.

Geographies -- We have seen that in each period which we have studied the trend toward more and more visual education could be traced through geography text books.

In the second half of the nineteenth century there was a definite change in the method of teaching geography and in the type of text

(7) Swain, G. R., "The Stereopticon in Secondary Teaching", School Review X (February 1902), p. 146

book used. Arnold Henry Guyot, coming to America in 1848 and teaching in the Normal Schools of Massachusetts, brought a complete reversal in the approach to this subject. He stressed emphasis on human relations as they are influenced by physical conditions and this new thought provoking method necessitated the use of more vital maps. The map-drawing method had its vogue in this period but it was a vogue which quickly passed for the very simple reason that few children seem to have a good power of visualization. Both maps and pictures in the geography books of the period, however, are more in keeping with our modern conception of adequate visual aids.

Museums -- We have already spoken of the many museums which came into existence during the nineteenth century. It was late in this century, however, before teachers began really to appreciate the value in museum trips.

Museum lectures became popular just before the turn of the century and classes for adults were organized in many cities. Some few years later education for museum instructors was deemed essential and museum clubs, classes and story hours for children were developed with trained museum attendants acting as teachers. This progress in museums was coincidental with the development of visual education in the schools and now we find the museum and the school working hand in hand.

Kindergarten -- Another form of visual education which has become so familiar to us today that we are not apt to consider it as a department of visual education in the kindergarten.

If we discount the mystic symbolism which Froebel included in his

philosophy, we have a concrete example of visual education in its most simple form in the practices of the kindergarten. Froebel taught that "to learn a thing in life and through doing is much more developing, cultivating and strengthening than to learn it merely through the verbal communication of ideas."⁵

That the concrete must precede the abstract is, of course, a fact which has long been accepted by teachers and the growth of kindergartens throughout the country in the second half of the nineteenth century proves that educators were beginning to appreciate the value of visual education for even the smallest pupils.

So we have traced through more than two thousand years a steadily increasing trend toward the universal use of visual aids in education. It remains for the dawn of the twentieth century to bring the moving picture with all its advantages and shortcomings.

(5) Knight, E. W., Education in the United States, p. 520

CHAPTER X
CONCLUSION

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Through the foregoing chapters this study has sought to trace the various trends in the development of visual education. This search has led back to the very beginnings of family and tribal life and has shown that visual education was used in a crude manner as long ago as those far-off days when man first struggled up from the level of the animals and made his rough home in the shelter of a cave.

Visual Education in Review — The development of visual education through succeeding centuries was slow and is hard to trace, but after the invention of printing the trend is more easily followed. Erasmus, Rabelais and Montaigne each made his small contribution to the development of visual education at the time of the Reformation but it remained for Comenius and his "Orbis Pictus" to point the way for future educators. It was men like Rusdow, Pestalozzi, Froebel and Herbart who, strongly influenced themselves by the example set by Comenius, left their own ineradicable imprints on the educational philosophy of their period and this furthered the cause of visual education.

The preceding chapters tend to show that those educators of ancient and medieval days who gave thought to visual education did so either by intuition or precept. Their intuitive method has in later days been proved to be good psychology.

Visual education's philosophy, psychology and methods were rather well worked out by the middle of the nineteenth century. The only hindrance to its advance at that time was the undeveloped state of science

and technology. For many years retarded technical and industrial advance held back visual education. Toward the end of the nineteenth century, however, mass production and scientific and technical advances had put into the hands of the educator adequate tools for visual education. Teachers now had film strips, colored slides, and, last but by no means least, the moving picture. In the more than forty years since the turn of the century teachers have seen visual education become an increasingly popular medium and the moving picture take its place as a necessary adjunct in every properly equipped school.

Moving Pictures -- Moving pictures are now used so largely to supplement text books and manuals of instruction that any discussion of them from the historic point of view in this paper would prove trite and superfluous. The future will doubtless bring many improvements to classroom moving pictures and educators in years to come will no doubt consider the technique of the middle of the twentieth century as crude and imperfect. To the educator of today, however, looking back over the long, hard path to the age of Comenius and still further back to that ingenious cave dweller who first drew a picture for the education of his child, the present day educational motion picture seems the acme of perfection in the history of visual aids. It is a far cry from the simple drawings on the wall of a cave to a moving picture on the wall of a modern school room. The road has been long but the journey has undeniably been a successful one.

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Date May, 1948

