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MOVING PICTURES AS A FACTOR IN EDUCATION

By PIERCE J. FLEMING, A. M.

In looking back at the progress that education, in its widest sense, has made in the history of the world, one can but be strongly impressed with the mighty part the picture has played in this advancement. In the early days the rude pictures drawn upon soft stone and allowed to harden into the "hieroglyphics" became the histories of the times, and such an inestimable value did they possess that without them, even now, we should be unable to record the world's history and its advancement. That the picture, whether scratched in Assyrian clay or cut into Egyptian stone, served well its worthy and noble purpose is readily admitted by historians, anthropologists, philologists, ethnologists and explorers the world over. In mediæval times the picture assumed an important part in the world's development, sometimes supplementing and at other times being supplemented by the library. Many of the leading incidents of the Bible have been painted and are exhibited in the picture galleries of the world. Should, therefore, all the books and writings in the world be destroyed, many of these incidents could be reproduced for us from paintings and sculpture. Much of the history of many nations is found in the illustrative as well as in the written records. The living picture with its life portrayals and accurate descriptions is the marvel of all these things.

The Cinematograph is a development of the zoetrope, or "Wheel of Life," described by W. G. Horner about 1833, which consists of a hollow cylinder turning on a vertical axis and having its surface pierced with a number of slots. Round the interior is arranged a series of pictures representing successive stages of such a subject as a horse galloping, and when this cylinder is made to rotate an observer looking through one of the slots sees the horse apparently in motion. The pictures were first drawn by hand, but afterwards photography was applied to their production. The modern Cinematograph was made possible by the invention of the celluloid roll film, on which the serial pictures are impressed by instantaneous photography, a long sensitized film being moved across the focal plane of a camera and exposed intermittently. For an hour's exhibition 50,000 to 165,000 pictures are needed. In order to regulate the feed in the lantern a hole is punched

in the film for each picture. The dancing and vibrating of the picture in an unpleasant manner is due in a great measure to inaccuracy in the placing of these holes or to the wearing out of them.

In modern times the impulse toward the better and more rapid cognition of a thing is evidently what all educators are striving to develop and satisfy. Regarding this Prof. Wm. James in his "Talks to teachers on Psychology" says, "Novelties in the way of sensible objects, especially if their sensational quality is bright, vivid, startling, invariably arrest the attention of the young and hold it until the desire to know more about the object is assuaged." Again, Dr. Wm. H. Burnham lecturing on Education speaks of the crying need for more action, or at least the representation of it, and less teaching. Surely then, if this be true, no one can doubt the advantage of the moving picture method with its bright, vivid, novel, startling and interesting way of presenting things. Even in the theatres, when one considers that at least four millions of people visit these places daily and remain at least an hour, what a tremendous opportunity there is for an educational as well as a moral uplift.

The Cinematograph with its compelling reality, its unlimited sources from which to draw subject matter, and the remarkable progress which its manufacturers have made in overcoming the defects in its mechanism, represents to-day the most highly evolved instruction-giving instrument for both the many and the few that the present century has produced. When exhibited under the direct supervision of one whose ability as an educator is recognized, it is difficult to prophesy the vast amount of actual good that can be accomplished. J. E. Wallace Wallin, *Pedagogical Seminary*, June, 1910, in discussing the Psychology of the moving picture craze, says: "Human culture must utilize not suppress native capacities, instinctive tendencies, inherited nervous organisms. . . . It would thus appear that one of the sovereign remedies for inattention and educational waste is to appeal to instinctive interests or to the hereditary forms of attention."

Now comes the question as to how we can stimulate these interests. We must use the stimuli which through the ages have played an important part, the stimuli without which the race could not have developed. What are these stimuli? They are the representations of living things rather than dead, of moving things rather than static things; they are the successive phases of some common phenomenon of nature rather than the bare picture of some one particular phase of it; they are the actual representations of many of the things we read and hear about which by their novelty will

attract the attention, and, with that desire so common to all of us and especially the young to see the conclusion of a series of events, will hold the attention to a considerable length of time. It was by attention to the first of these that primitive man protected himself and those dependent on him from his enemies, and it is by the strictest attention to the second of these that we of to-day are making such rapid strides in the acquisition of a more complete knowledge of nature and its workings. The parent or teacher, therefore, should appeal to the instinctive attention and thus work with nature; for by so doing one takes advantage of a vast hereditary impetus; and the potentiality of hereditary interests and involuntary attention so far surpass the potentiality of acquired interests and voluntary attention in the young child that not to use this in the accomplishing of educational ends would be to refuse to accept a priceless gift from nature.

This compelling fascination of the moving picture is due to the fact that it is based on the dynamics of spontaneous attention, the laws that govern our inherited tendencies to attend. For this reason then, the Cinematograph by presenting different processes or pictures in motion rouses in us the instinctive tendency to attend to moving things. It is a fact that a great many times, on account of the very life-like movements performed by the characters in the pictures, that the pictures cease to be illustrations, and are actually changed, especially in the case of those of a more visual type, into animate existences. Exclamations of horror by the observers as a person falling from a building appears to be about to strike the ground, the attempt to shrink from an approaching animal, and various other instances are convincing proofs of this. There is a case reported from Ann Harbor, Michigan, of a small boy, with an air rifle, shooting at a bird portrayed on the screen. This appeal of the Cinematograph to the instinctive tendencies is in a great measure the principal reason why it is so vastly superior to the Stereopticon. The limitation of the Stereopticon to the presentation of static things places it henceforth among the decadent media of instruction. In the case of an automatic pistol the comparison is seen very readily. The Stereopticon is able to present but a very few phases of the mechanism, while the moving picture machine with exposures lasting one forty-two thousandth of a second can photograph in less than one-tenth of one second four hundred successive phases of the firing mechanism of the pistol. All of these can be presented at a uniform rate of speed, so that each and every minute detail can be distinguished very readily.

The Cinematograph also takes advantage of other instinctive interests. The constantly recurring sharp contrasts in the

film as regards color, size and other characteristics, and the introduction of the unusual, the comic, the bizarre, etc., furnish the foundation of appeal to our instinctive desire for something new, something different. Again, the facility with which a scene, unparalleled in actual life and with so unexpected a denouement, can be made and projected, shows how the moving picture can, in a great measure, utilize the forces of attention and curiosity. Is it anything to be wondered at therefore that millions daily sit entranced before the cinematographic screen when their attention, with hardly an effort on their part, is not only attracted but even held for a comparatively long time?

Another very commendable and until a short while ago unheard of feature of the moving picture is the possibility it presents for the popularizing of instruction in subjects vital to all of us and regarding which little or no reading matter is available. In a great many places, notably Chicago and New York, this feature of the moving picture is being thoroughly tested and up to the present gives every indication of becoming a permanent part of the programme wherever used.

Geo. L. Voorhies, Secretary-Treasurer of the Chicago Principals' Club, District No. 4, sends the following account of the use of moving pictures in the schools there:

"The Board of Education has established nine social centres in the public schools and as a part of the same. They are open two evenings a week and are available for the parents as well as the children. These centres offer the following programme of instruction and entertainment:

"Reading rooms, music, both vocal and instrumental, gymnasium work, parlor games, amateur dramatics, dancing and the motion picture lecture.

"In regard to the scope of the moving picture work, I believe it should be entertaining as well as instructive, and should appeal to the various sentiments of interest, wonder, humor and pathos."

The following is a programme that Mr. Voorhies, with the co-operation of others in the same field, has mapped out:

Industrials: (a) Food: *e. g.*, Wheat; harvesting, milling, baking.

(b) Clothing: *e. g.*, Cotton; picking, ginning, weaving.

(c) Shelter: Lumber; logging, milling, building.

(d) Transportation: Railroads; surveying, building, running.

Nature: (a) Plant growth: Seed, plant, flower, fruit.

(b) Animals: Egg, embryo, infant, adult, adult activities; fish hatcheries, ostrich farms, etc.

(c) Minerals: *e. g.*, Iron mines, smelting, steel mills.

Travels: (a) Scenic country from train.

(b) Ocean life on steamer, coast and train, river scenery from steamer, *e. g.*, Hudson, Rhine.

(c) Views from aeroplanes and other odd modes of travel.

(d) Touring: Alps, canyons, Yellowstone, Congo.

Art: (a) Panoramic trips through noted museums, parks, cities.

(b) Construction of paintings, sculptures, tapestries, buildings.

Anniversaries: (a) Parades, coronations, Mardi Gras, Veiled Prophet.

Drama: (a) Classic plays by noted casts, extravaganzas.

Athletic: (a) Field sports, ball games, rowing, races, drills, exercises.

On some of these subjects films are already available; on others they can be manufactured.

That the manufacturers of moving films are taking advantage of the educational possibilities of moving pictures is evidenced by the "Free Educational Exhibit of Animated Photography" given some time ago by one of the supply houses in Cleveland for the benefit especially of the educators of the public and private schools there. Views were exhibited of the leather industry, wild birds in their haunts, the formation of drops of water, various chemical processes, fruit growing and the like. All present were enthusiastic in their approval of the moving picture as an educational aid.

Prof. Frederick K. Starr, Chicago University, expresses his appreciation of the educational advantages to be derived from the moving picture in the following passage:

"I have seen Niagara thunder over her gorge in the noblest frenzy ever beheld by men; I have watched a Queensland river under the white light of an Australasian moon go whirling and swirling through strange islands, lurking with bandicoot and kangaroo; I have watched an English railroad train draw into a station, take on its passengers and then chug away with its stubby little engine through the Yorkshire dells, past old Norman abbeys, silhouetted against the sky line, while a cluster of century-aged cottages loomed up in the valley below, through which a yokel drove his flock of Southdowns; I have beheld fat old Rajahs with the price of a thousand lives bejeweled in their monster turbans and the price of a thousand deaths sewn in their royal nightshirts as they indolently swayed in golden howdahs, borne upon the backs of grunting elephants; I saw a runaway horse play battledoor and shuttlecock with the citizens and traffic of a little Italian town whose streets had not known so much commotion since the sailing of Columbus; I know how the Chinaman lives, and I have been

through the homes of the Japanese; I have marveled at the daring of Alpine tobogganists and admired the wonderful skill of Norwegian ski-jumpers; I have seen armies upon the battlefield and their return in triumph; I have looked upon weird dances and outlandish frolics in every quarter of the globe, and I didn't have to leave Chicago for a moment. No books have taught me all these wonderful things; no lecturer has pictured them; I simply dropped into a Moving Picture theatre at various moments of leisure and, at the total cost for all the visits of perhaps two performances of a musical show, I have learned more than a traveler could see at the cost of thousands of dollars and years of journey. Neither you nor I fully realize what the moving picture has meant to us, and what it is going to mean. We're living at a mile-a-second gait in the swiftest epoch of the world's progress, in the age of incredibilities come true. The talking machine has canned the great voices and master melodies of our time, but the moving picture machine has done more,—it is making for us volumes of history and action; it is not only the greatest impulse of entertainment, but the mightiest force of instruction. We of to-day take so much for granted; we are so thoroughly spoiled by our multiple luxuries that we do not bestow more than a passing thought upon our advantages, because the moving picture machine is an advantage, a tremendous vital force of culture as well as amusement. Its value cannot be measured now, but another generation will benefit more largely than we of to-day can possibly realize."

The United States Government has now recognized the educational value of motion pictures for the purpose of impressing on the minds of her men geographical, historical, military, naval and other events in a manner calculated to produce a lasting memory. The U. S. Battleship Vermont was the first to order regular film service, and others have since followed. Other branches of the Government service are already making use of the moving picture machine for special work, notably the Reclamation Service. In a scientific way the men of this branch are achieving splendid results. The recent pictures taken of the Grand Cañon of Arkansas, the Royal Gorge, and the Sky Line Drive, by W. J. Tubken, of the United States Reclamation Service, and Geo. L. Beam, Official Photographer of the Rio Grande Railroad, were in every way successful. The films measured 21,000 feet and are the first moving pictures taken by the Reclamation Service in showing the rapid progress of the West. These pictures will be shown to the members of Congress, and after being displayed in a series of lectures will be loaned to Lyman Howe for exhibition in various other parts of the country. This feature of the

moving picture is as yet quite undeveloped, but if more universally used would effectually put a stop to the nefarious schemes of unprincipled speculators dealing in Southern and Western lands. Up-to-date legitimate real estate dealers could, with the aid of moving picture exhibitions, show what they have for sale in its actual condition, and in this way do much toward helping the much needed migration to the West and South. It is very evident then that the problem before those who believe in the efficiency of the moving picture as an educational help is to demonstrate this efficiency to the public. This can best be done by the more frequent display of scientific films in the picture theatres. When some of the valuable things that may be taught by them have been learned, then will parents realize how much the Cinematograph would aid in the education of their children.

Regarding the educational advantages offered by the moving picture, Thos. A. Edison, the well known inventor, says: "Moving pictures bring to every one an absolutely clear idea of foreign peoples through their customs, through scenes of the world and through the industries and pursuits of man. They have a tremendous educational effect. This is true even of the seemingly purely amusement motion pictures. Little cross sections of life are shown, staged and acted better than are the shows given at a considerably higher price. The motion picture is an important factor in the world's educational development. . . . It will wipe out various prejudices which are often ignorance. It will create a feeling of sympathy and a desire to uplift the downtrodden peoples of the earth. It will give new ideals to be followed. For these reasons I believe that moving pictures in the hands of broad minded, intellectual and informed workers are for the world's good, for the innocent amusement and the moral advance of the great masses of the people."

The Civil Engineering Society of the Massachusetts Institute of Technology, in order to give its members some idea of large engineering projects, made use of the moving picture. Films on the Panama Canal, the building of a railroad in Canada, manufacture of steel rails, and other like subjects were shown. Regarding its success Isaac Hensmann, President of the Society, says, "It was not especially expensive and was greatly appreciated by all who saw it and well worth the trouble."

Sir E. Ray Lankester, the eminent biologist, expresses his keen appreciation of motion pictures in the following terms: "The method of instantaneous photography of minute organisms is a valuable means of research. Points of structure are revealed which were not previously seen, and, moreover, these

new discoveries are permanently recorded. For the study and analysis of the movement and the details of the action of locomotor organs (such as cilia, flagella and pseudopodia) the instantaneous films are nothing less than a revelation. While these methods do not take the place of the actual microscope they can supplement it in an invaluable way. Moreover, they can give to large gatherings of people, with the greatest ease and absolute truthfulness, a real view of microscopic life, and enable every one to have a true conception of what the microscopist and biologist are actually studying; they make science less remote, less the possession of the privileged few; and they enlist the sympathy and interest of our fellow citizens for its glorious work. I look forward to the provision, not later than next year, of a cinematographic lantern in every board school and in every college class room, and if I still had a biological laboratory under my supervision (as for the most of my past life I have had) I would obtain the film-producing photographic apparatus and set to work to make discoveries, and,—what is a great charm of the new method,—their simultaneous record, by producing films of every kind of moving microscopic organisms. I should study not merely the combined effect when rolled through the lantern, but the actual instantaneous phase permanently printed in each picture of six thousand which make up a five-minute record." It is very evident that Sir Lankester's praise of motography would be equally applicable in the realm of the physicist, the naturalist, and even the chemist.

The chief difficulty in presenting these and other scientific films before the public, or indeed before the special audience, lies not in the vagaries of public taste, but in the faulty system of distribution at present employed in marketing films. England has already taken a step toward the establishment of an open market for the disposal of educational subjects of all kinds; and, unless similar tactics are adopted here, this country will soon fall behind other countries in the development of educational motography. All the scenic and industrial films that can be obtained are used by the Education Alliance in its moving picture shows given twice a week in New York City under the direction of Boyd Fisher, Director of Entertainments. He says: "The number of educational institutions which are giving moving picture shows is increasing greatly, and they are beginning to make their demand for educational films felt. To meet his demand the General Film Company proposes soon to establish an educational bureau which will serve as a sort of clearing house for the educational movement in connection with the moving pictures."

At Madison, Wisconsin, the use of moving pictures was an experiment, carried on until all the children of grades seven and eight had had the benefit of at least one exhibition. The manager of a moving picture house interested in the use of moving pictures for educational purposes, furnished the machine, films and an operator without cost. The films selected were *Oliver Twist* and *Lancelot and Elaine*. The story was told before the pictures were shown. As the work was arranged, the picture was a form of story telling. Where the child from his own experience could not supply the setting, as in *Lancelot and Elaine*, the pictures were of very great advantage. Mary A. Smith, Librarian, speaking of the experiment says: "I am certain it had some very good features. Teachers and others whom we invited were not hypercritical, in fact not at all as critical as we expected." This is but one of the many examples of how unjust criticism and lack of faith in the educational possibilities of the moving picture by people utterly incompetent to judge, has not only been overcome, but, after a fair trial under anything approaching perfect conditions, has won these critics over to its side.

Chronophotography, on a fixed plate, has furnished the experimental solution of many problems in Geometry, Mechanics, Physics and Physiology that no other method could so readily have solved. In Geometry, for example, the "formation in space of geometrical figures of three dimensions," defined by Geometers as "figures that are generated by straight lines or curves of different forms displaced in different ways," is a difficulty of no mean proportion. Chronophotography, however, realizes this conception completely. In Mechanics, also, the very many difficulties which Gallileo and Atwood had to surmount in order to determine the laws of motion, of velocities and of accelerations, will, for the future, be saved in like cases for those who make use of chronophotography for this purpose. Hydro-dynamics is generally looked upon as one of the most complicated sciences. All the difficulties met with here find their experimental solution in chronophotography. In Physiology it is to the physiological study of the different gaits of animals and of the functional movement of their different organs, etc., that chronophotography is directed. Various movements of the jaw in speech, which are exceedingly difficult of observation, are reproduced clearly and accurately through chronophotography. It is not out of place to say that the Cinematograph may be a help to the psychologist. Children singing may be photographed, and their different facial expressions, such as the wrinkling of the brow, opening the eyes wide, false position of the throat, and so forth, may be studied and the results noted. At Dresden,

as reported in the *Pädagogisch-psychologische Studien*, a very excellent film has been procured showing the impulse to movement expressed by attitude, facial expression, and so forth. Pathological phenomena may be presented vividly and accurately to a large number of students.

As a means of instructing the pupils of the city schools in the science of warding off diseases and unsanitary conditions, Dr. M. Goltman, Superintendent of the Memphis Health Department, has decided upon the installation of a moving picture apparatus. The health superintendent, with the co-operation of the School Board, will arrange the moving picture lectures so that the machine can be taken from school to school in a systematic manner. With it will go an operator who is competent to speak advisedly upon every subject presented. The subjects will include the development of the fly, the development of various germs, and everything of a sanitary and unsanitary character which a student in the public school ought to know.

The doctors of insane hospitals and the superintendents of penal institutions have placed the stamp of approval on the moving picture. Moving pictures are to be shown at the Elgin (Ill.) state hospital to assist in the cure of the insane, and to offer pleasant diversion to the incurable. "Moving pictures will help us materially in curing patients," says Dr. Wilgns. "They will take the minds of the patients from their misfortunes, and like any other harmless diversion will stimulate the brain." With a moving picture show—the first that half of them had ever seen—the inmates of the Western Washington Hospital for the Insane at Fort Steilacoom, Washington, were given a Christmas Eve entertainment. "The moving picture machine," Superintendent A. P. Calhoun says, "has been installed as a permanent feature of asylum life." The inmates of the United States Penitentiary at Leavenworth, Kansas, have motion picture entertainments at regular intervals. As an educational agency in preventing the spread of tuberculosis, the moving picture is being used extensively in all parts of the country. Not only in Rochester, whose playgrounds are admittedly the best in the country, but also in Cleveland in connection with their playground work, the moving picture is being used with very good results.

The possibility of teaching Geography with the aid of the Cinematograph is deserving of consideration. When a child is desirous of knowing what a country looks like, does it want to know the exact height of a mountain, or the length in miles of a river? Is it not, on the other hand, sufficient to know that there is the highest mountain in this or that country, or that, that country has the longest river in the world, if one can but

see the actual representations of the people, their manner of living, their customs and their industries? The Cinematograph, with its wonderful views from the polar regions of everlasting ice to the burning plains of equatorial Africa, afford a substitute for that heretofore irremedial weakness of geography text-books, namely, the absence of reality. Give the child his geography lesson from the screen together with a part of the regular lecture by the teacher, and, instead of a dull, uninteresting memory lesson, that child has learned a number of facts concerning some city or country, that will never be forgotten.

Quite apropos of this suggestion of the use of the Cinematograph, the question as to which of the two predominant methods of teaching geography now in vogue should be used might well be discussed here. If, in accord with Colonel Parker's method, the end to be attained in our schools by the teaching of geography is to give the pupils such a knowledge of the physical contour of the world as would enable them to reproduce its surface in a series of raised maps or casts, then this method is evidently the correct one. How many of the present-day educators though would justify such an expenditure of the child's time and energy as is required in the committing to memory of the boundaries of the different states and countries, the length in exact terms of the rivers, the height in feet and inches of the mountains of a country, and the like? Is it not far more essential that the child's mind be taken up with the acquisition of the more characteristic facts about the different countries—the fauna and flora, the agricultural, mineral, manufacturing and commercial interests? It is by a study of geography with this end in view that a child may come to know and understand the causes that have led to the shifting of populations, to the growth of cities, and to the changes that have occurred in the modes of government. It is just these characteristics that the moving picture brings to the child's mind better than any other method and in a way calculated to make a lasting impression. In so far as description occupies a place in the teaching of geography, in just that measure should motography supplement the use of text-books.

Ordinary photography has left much to be desired in the study of the movements and habits of bird, animal, and insect life. One of the very characteristic positions of an animal, namely, that of seeking and capturing its prey, cannot be properly presented by ordinary photography, nor can it give a graphic idea of the facial expressions and characteristic movements of an animal under observation. The moving picture machine does away with these difficulties, and it is now possible to place before a natural history class "living pictures" of

bird, animal and insect life, which, by faithfully reproducing every action of the subject under discussion, more vividly impress the minds of the students than any lecture illustrated by still pictures or drawings. There can be no question as to the importance, to students of natural history, of using nothing but photographs as illustrations. No matter how well the artist may draw or how skillfully the engraver may copy, there cannot be the same accuracy of detail as it is possible to obtain from a photograph. Motion pictures would give to natural history classes the opportunity of studying subject films in which the specimens,—some of which are rapidly becoming extinct,—are depicted moving amid their natural surroundings. Of motion pictures in their relation to Zoölogical Science, Mr. P. Chalmers Mitchell, M. A., D. Sc., F. R. S., Secretary of the Zoölogical Society of London, says, "I have the pleasure to thank you (meaning a London Film C^o.) in the name of this Society for the exhibition of films of zoölogical studies shown at our last scientific meeting. I am glad to take the opportunity you give me of stating that, in my opinion, such studies are a great aid to the educational side of zoölogical science. They are not only fascinating as spectacles, but they enable the events in the life history of many animals, and in particular of the lower animals, such as insects, to be displayed to a large audience in a fashion far beyond the possibilities of ordinary photographs, even when accompanied by the most vivid descriptions. The combination of patience and skill, and the technical excellence of your apparatus has brought about a most startling result."

There are at present films available upon the following topics:

Agriculture, animal life, bacteriology, biography, biology, botany, entomology, ethnology, fisheries, geography, geology, history, industrial subjects, kindergarten studies, mining and metallurgy, microscopy, military, naval, natural history, ornithology, pathology, pisciculture, zoölogy, railroad, religion, travel, and scenic, tropical subjects.

There are also a great number of other natural history subjects whose use in the schools would impart a thorough knowledge of these subjects. The *Lion Hunting* film, obtained last summer in British East Africa, besides vividly illustrating the life of the monarchs of the tropics in their natural surroundings, also illustrates in an incomparable way the general contour of the country and the plant life with which it abounds. Many other films have been obtained showing the life and habits of other wild animals, the very interesting characteristics of birds about which little was known, until, with the advent of the moving picture machine, there were revealed the

inmost secrets of the lives of many rare specimens. Rare specimens of eagles, perched upon inaccessible rocks, have been photographed, and the rearing of the young of the sea-birds is plainly seen. Again, the living picture triumphs in the case of insects; and the number of films now on the market is indeed amazing. They range from moths to millepedes, and from beetles to butterflies. There exists at the Brighton Aquarium probably the finest collection of fish in captivity in the world, fish from the tropics, the Arctic regions, and from the temperate zone. A film of these has been secured and one can see on the screen live lobsters, dog fish, alligators, skate and cuttle fish, and in fact any other kind of fish, just as well in the north of Scotland as in the centre of China.

One of the serious defects noted in the moving picture is its inability to display natural colors. It requires but little imagination to realize the enormous possibilities of the moving picture plus color photography in education. It is predicted that this drawback will shortly be overcome. Cinematograph films produced by ordinary photographic processes, being in black and white only, fail to reproduce the coloring of the subjects they represent. Coloring by hand has been found too expensive, and, moreover, does not yield very satisfactory results. Attempts to adapt three-color photography, by using simultaneously three films, each with a source of light of appropriate color, and combining the three images on the screen, have to overcome great difficulties in regard to maintenance of register, because very minute errors of adjustment between the pictures on the films are magnified to an intolerable extent by projection. In a process devised by G. A. Smith, the results of which were exhibited at the Society of Arts, London, in 1908, the number of color records was reduced to two. By his process, which is somewhat complicated, he succeeded in giving a reproduction of a scene photographed in colors which were sensibly the same as those of the original. "Motography," a Chicago publication devoted exclusively to a study of moving pictures, gives the following account of the use of color photography:

"The first public demonstration of color photography in moving pictures ever seen in Chicago was given recently at the Union League Club. One of the most interesting pictures shown was the famous "Bud to Blossom." The picture represents an actual moving picture photograph of many varieties of flowers bursting into bloom. The blossoming of the flowers was hastened by every artificial means possible, and photographs taken every seven seconds for two days."

M. Cervais Courtellemont, a noted French explorer in the extreme Orient, mainly known for his keen studies of the

Islamic world, is doing a noble work for mankind in preparing and presenting scenes of unusual interest in the East. He gives one the impression of always wandering on the planet with an objective in his hands, securing results which have been at all times of the greatest documentary value. China, Japan, Madagascar, Persia, Asia-Minor, Turkey, Arabia, Syria, Palestine, Balkan States, Tunis and Egypt have disclosed for him the most picturesque beauties of nature. More particularly since the Lumieres created their wonderful process of colored slides have the treasures of Cervais Courtellmont been increased in value and beauty. Foremost in the practical application of the Lumiere process he has produced colored visions of the Oriental countries without equal.

On March 29, 1911, the George Kleine Film Company released one of the best fully educational reels ever produced in America. It is a split reel consisting of two educational subjects, the first entitled "Dr. Charcot's Trip Toward the South Pole," and the second "The Cormorants or Japanese Catching Fish with Birds." The scenes depicted in "Dr. Charcot's Trip Toward the South Pole" were obtained during two years' exploration in the Antarctic by Dr. Charcot, an eminent French explorer. The first polar picture is of "an ice-bound sea"—a phrase often met with in geography textbooks but understood in quite a new light by means of this picture. It is a bleak and forbidding picture, with its heaving ice floes and angry waters darting and swirling between every crack and fissure, but still has a weird and affecting beauty. Wonderful pictures of frozen regions follow, showing vast expanses of snow and jutting ice crags. The last few pictures show a colony of penguins, those strange man-like birds who seem to enjoy a comfortable existence in this forsaken spot. The second subject shows a very curious method employed by the Japanese in catching fish. Cormorants are birds, indigenous to Japan, which subsist upon fish. The Japanese have tamed these birds and have turned their fish catching abilities to their own use. Many glimpses into the homes of the Japanese are shown, and this fact alone makes the picture a valuable one for those of the West who are interested in the welfare of their Eastern neighbors.

Paul J. Rainey, who expects to spend three years in East Africa, India, Borneo and the Malay Archipelago, departed February 1st. With Mr. Rainey is Dr. M. E. Johnson. They have arranged to send many specimens to the Smithsonian Institute at Washington and to the New York Zoölogical Society. An item of their equipment for the expedition is a moving picture outfit, including 100,000 feet of films.

The very latest possibility for the use of moving pictures is that of animated journalism. The psychology of the trained photographer, whose instinctive impulse, when a shot is fired or a magazine explodes, is to press the button of his camera, would be an interesting study, but the fact that the omnipresence of the machine is rapidly creating a complete pictorial mirror of life is more important. So well are the camera men "covering" the events of the day that they threaten to drive the reporter out of business. They have in London three daily papers, each of enormous circulation, which contain practically nothing but news pictures with descriptive captions. They have more:—Pathé Frères, the cinematograph manufacturers, have established a daily service of moving pictures of the news. The enterprise, which goes by the name of "The Animated Gazette," is a complete news organization, with an editor, Mr. Steer, who has abandoned the old methods of Fleet Street for the new journalism, and a staff of five thousand "photo-correspondents" scattered pretty well over the world. The product of this organization is a cinematograph film which is sent out to a circuit of moving picture theatres, and is already being seen daily and nightly by more than two millions of people. An idea of the circulation possibilities of this kind of a news dispenser may be gathered from the fact that New York to-day has two hundred and fifty moving picture shows, that London has five hundred, that every city and town of America and Europe has from one to a dozen. There is little doubt but that the new idea will soon be at work in America. The editor of "The American Animated Gazette" would sit in his office in New York, scan telegraphed "flashes" of the news of the world and send out his orders. Where the old-fashioned managing editor would send for a "thousand words Roosevelt," he will wire his correspondent, "Send five hundred yards Roosevelt,—feature the insurgent smile," or he will order, "Rush one hundred and fifty yards aviation meet, two hundred if Post turns handspring in air." Journalism has never been an altogether restful enterprise. Some had fondly thought that it could not grow more "animated," but Mr. Edison has made the world over in many ways.

How many of us doubt that some day the people of India, like the people of this country, will rise up against English rule and assert their independence? What they need there is not money or forces, but simply the knowledge that their English rulers are men and not gods. Mr. Henry Kitchell Webster, writing of his travels in India, suggests this and says that he is firmly convinced that the one most important factor in bringing about this change of affairs is the Cinematograph. "It is surely and silently bringing to the minds of the people

there a knowledge of the White Man of the West as he really is. You find it (the Cinematograph) everywhere, not only in India, —from Simla to Moulton,—but through the whole East from Aden to Singapore and on, over the edge of the beyond in Borneo. Indeed, it was in Borneo, Dutch Borneo at that, in the little town of Pontianak, which squats in its marshy little maze of canals exactly on the line of the Equator—the Venice of the East, as somebody in a frenzy of irony once called it,—it was here that the idea broke over me in its full force. The show was in a big wooden building with galleries on three sides. The film that was running when my companion and I entered showed the breaking up of the ice with ice breakers in the harbor of Christiania. The only person in the audience besides myself who had ever seen a piece of ice large enough to cool a highball was the Scotch Engineer of the Chinese tramp that had brought me to Pontianak. The show lasted for hours, and the pictures were just what we see here,—domestic tragedies, domestic comedies, domestic farces of the Western world,—our own world. Here were white men at home,—men not gods, if you please,—doing things for themselves, carrying burdens, taking orders, going hungry, getting arrested; a street sweeper, a white man, being run over by an automobile; a white woman, a memsahib, being defied by her cook and having her dishes broken and being left to peel her own potatoes; and if it looked strange to me after six months, what was it to the keen faced Malay boy who watched it all with such rapt attention? What thoughts were going on in that mind of his about these gods? Were they gods after all?" The writer adds that he has no quarrel whatsoever with the methods the English employ in the government of these people. Whether they are within their rights or not makes no difference to him. The inference that must be drawn from the foregoing, however, is this,—the people of India, and especially the young of the lower class, are being educated.

What then is the function of which motion pictures as an aid to pedagogic instruction? Surely no one believes that they are intended to drive out or supplant the school. The motion picture *has* entered the school, and there is reason to suppose that it will do so more and more, not as an invader or conqueror, but as a humble and obedient servant trying to help along and render efficient the established methods. The object of this new method, then, is to furnish illustrations and point examples, to reduce the general to the particular, to render the subjective objective, to clothe the abstract in forms of the concrete. It is the office of the motion picture, just as it is of any still picture, to help in the reducing of general principles to particular applications. If still picture illustrations help

in the teaching of geography, history, physiology, and so forth, how much more so does the motion picture illustration help with its bright, vivid and as yet novel way of presenting things?

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