

Transcript of the
Statement by Dr. A. M. Skeffington
Final presentation in 1975

First, I wish to express my appreciation of the extraordinary thoughtfulness shown me by the Chairman and the Program Committee of this Congress when they asked me to prepare an opening talk when they know it would probably have to be spoken by a voice other than mine. So far as I know, it is unique in the history of professionalism. I am, therefore, keenly aware of the implied complement. I am warmly grateful. The faculty of this Congress includes some of the best know men in our discipline. Look at your program. Any knowledgeable optometrist can understand or appreciate why it is of special significance to me! Your lecturers emphasize what I believe with my whole heart, i.e., that you are the “COURT OF LAST RESORT” to the slow learner. It is with great pride that I state here that optometry has built a new discipline, completely separate from other groups who may aspire to claim prominence in this field of care of the slow learner, whether young or old. Your Congress faculty have the ability to abstract the processes used in their work; have the wonderful attributes of transmitting them into the language and thinking of today. The theme of this Congress can be felt the minute we walk into this room. It is almost a psychic atmosphere; it is so different. All of your faculty have stellar qualities and abilities to share what they know. They put their materials in applicable clinical use. They practice what they teach. The knowledgeable optometrist understands the significance to me in what they say.

It was my great good fortune to be reared in the King James’ version of the New Testament. Because of this, I am tempted to repeat the words of an ancient in the Temple at Jerusalem when he said, “Lord, now lettest this, thy servant, depart in peace according to Thy word, for mine eyes have seen Thy salvation which Thou hast prepared before the face of all people...” There is no need to continue this quoting. Its message is really contained in the wonderful surge of interest as the visual problem is corrected. Pity the child who can read letters, i.e., has adequate sight but who cannot succeed scholastically. Once corrects, they are inclined to ask, humbly, “You mean I am not dumb?”

The whole fabric of western culture is permeated with such problems – visual problems. The tragic feature is that they are easily detected when remedial care can be

so easily and simply applied. The results seem miraculous. The late great Ralph Barstow once said, "We do miracles in our offices every day and do not consider them as miracles, just in our proper days' activities."

Millions of young minds have been wasted because of unrecognized and/or uncorrected visual problems. What other label could a non-comprehending world apply to the sudden changes in a child who was once considered capable and then who failed to the extent of being considered as hopeless? Then, because of us and our frame of reference plus our therapeutic approach, he can become amenable to teaching. It may be an optometric commonplace, but to those involved the changes may seem a miracle. Such cases are encountered so frequently. We may casually talk of the child's failures and their gaining the ability to achieve. We must not over simplify such cases. It is a semantic problem of singular difficulty. There is the language for Child Development; Visual Development; Child Vision Care. All refer in some degree to the normal child: normal environmental surrounds, yet all have a somewhat different connotation. Then there are a number of descriptive terms which are applied differently to the handicapped child.

This afternoon I wish to consider problems direct and/or related, such as the youngster described I 1931, but pity the child with eyes adapted to the out-of-doors, but with eyes ill-adapted to the book needs and is labelled "lazy" or "dull", or solely "bad" because he persists in remaining in the ranks of the "slow learner in the classroom." These are not genetically slow learners; they have developed. I will take the onus of the statement that any youngster with a refractive status of 20/20 or less in either direction has passed through the state of the emmetropic-orthophoria. If only the difficulty had been recognized and given prompt attention, the proper decision could have been made. This decision making is relative to the total child, not a local or limited affair in that child. It is one behavior which is truly organismic. I do not know of any other physiological circuiting that so affects the total person. The late great D.B. Harmon left us as part of our heritage the motion pictures of the changes in the total physical attitude brought about by the interposition of every form of lens. Unless the involvement of the whole organism in the seemingly "simple act of seeing" is understood and accepted, there is no possibility of achieving the "miracle of the 7th grader." Herein lies the basic role of the optometrist. It constitutes the enormous opportunity. Likewise inherent in the concept is a realization of an almost dismaying responsibility when all facets of professional demands are considered one by one.

Barstow once commented, in print, how differently the two of us approached our subjects. He wrote for the reading world, whereas basically Skeffington's material was

written to be read aloud. The seeming simplicity of our approaches has befuddled and misled many individuals outside our discipline who had concluded that this is too good a thing to be left in what they considered the “incompetent” hands of the optometrist. The competent optometrist is necessarily aware of the permeability of the total organism and its effects on an impending visual problem. It is easily understood how members of other disciplines, with their limited scope of interest, could fail to grasp the essence of the optometric “global” point of view wherein the optometrist does not confine himself to any facet of the total behavior but actually looks at the entire circuiting when considering the problem set before him.

One abstract philosophy wrote, “Teach the body to do many things; this will develop the mind and lead to an intellectual level of thought.” This description can apply to every behavior that distinguishes man from infra-humans. Man has the ability to THINK, to INVENT, and to DECODE RETINAL patterns – all the contributing patterns and circuits that make possible the achievement of the FINAL COMMON MOTOR pathway. Up to the present time, there isn’t a physiological, neurological, psychological explanation of the brilliant generality called the “FINAL COMMON MOTOR PATHWAY.” How the end-products of these nerve circuits are welded into the common motor pathway is still unexplained.

In the attempts to trace the pathways of these astonishing circuits, it was found that it takes less than 1/5th of a second. This time interval has become familiar to those of us caring for Visual problems. However, all this fades into comparative simplicity in comparison with the mechanisms of cognition, the basis for knowing, sparked by the Romanized statement, “I THINK, therefore, I am.” Man has these potentials.

Area 17 (V1) has been much touted as being the depositing site for the termination of the afferent phase of the visual-sensory input with some other not too clearly spelled-out areas. From that point on, vague references to “mental” and “intellectual” are discussed. From this point on, there continues to be too little in the research. But as more and more is learned about the central nervous system, undoubtedly in time we will gain a reasonably precise “point to point” relationship between the retina and specific areas. Wilder Penfield made the startling statement, which at that time was a bomb shell when he said, “Apparently, every experience one ever has had is held within the stream of consciousness.” But where? Where is the “memory bank”? It lies in the human’s ability to THINK, to INVENT.

Catherine and Howard Hayes published data of the chimp reared in their home. In their opinion a member of the genus Homo, if reared in a cultureless environment would be quite “ape-like”. It would serve no purpose at this time to discuss the

linguistic facts. With that gesture on my part towards other disciplines, I revert to our own subject, which might be stated as “The role of optometry”.

Optometry is unique. No one knows from where it operates, nor what its operation actually is. There is no actual discernable physiological physical part, like a lung, or an ear, or tongue. Yet we know the total organism is involved. Even the bitterly clung to “fusion center” has gone out of favor in the discussion groups. In short, we in optometry are concerned with an activity that, at present, has no home anatomically or neurologically. This should be dismaying to us. We do know that there is a visual aspect to thinking. At least we are not hampered by a clogging, dampening presence of some malfunctioning muscle system. The neurological components face the same problems. Professor Samuel Renshaw, an iconoclast, used to relate with unconcealed glee, the story of the experimenter who, using a fine scalpel, cut area V1 horizontally, vertically and fore and aft with no loss of operation. Renshaw also told of researchers who said that the aggregate of discharging neural pulses in the receptor area forms the basis of the visual system and that herein lies the seeing process.

In this same philosophy is held the idea of a “fusion center”, with its ingrained problems. Neither provides, even speculatively, any answer to how the pattern on the retina provides the means for transfer of the neural patterns into ideas, original thinking. We are still unable to supply the answer to the half-humorous statement of Heinrich Von Cleaver, “Still, we do not know how an idea knows what brain cells to pick.” We have come a long way in this quest. We can marvel at the elaborateness and intricacies uncovered in this almost cursory survey. Even so, it is elemental in comparison to the movement patterns implied in cognition. Fulton stated in his book that we are not organized in anatomical segments but in movement patterns. This, together with the bare sentence from the Arabian philosopher who said, “The eye cannot see what the mind does not know.”

There is a clinical and remedial phase of problems of vision which has been relegated to vested interest as though it did not present a field for scientific investigation. To the person in the clinical field, certain assumptions appear widespread and are puzzling. In reading much of the literature, one could well assume that the human eye was a perfectly transparent medium. To the user of the slit lamp, one of the most fascinating aspects of the external mechanism of vision is the amount of debris in the various media. The crystalline lens is treated as though it were an optically perfect lens. Since the day of Allvar Gullstrand, it has been known that the lens of the eye is anything but such a corrected curve lens. There is an implicit assumption that when a measurement shows a standard acuity to be present and if binocularity is

demonstrable, that any further investigation of the intactness of the visual mechanism can be discontinued. Professor John Paul Nafe, in an address in St. Louis said, "The eye plays an important part in vision, but it is just one link in the chain of facts and events that make up the visual system, so let's take a look into the system." There are only three principle elements: (1) the object seen i.e., what may be called the conditions of stimulation; (2) the neural process, including both the eye and its nervous connections; and (3) the conscious process of seeing. We try to break this down and find that others have been there before us. There already is a physics of optical phenomena, a neurology of ocular phenomena and a psychology of visual phenomena. Notice, that there even are different words for the three different aspects.

What about the physics of seeing? The physicists talk about light waves. We were under the impression that we could see people, houses, printed words, etc. – what about these physical objects? According to the physicist, the only adequate stimulus to vision is light, not trees and trolley cars, nor people, nor houses. That's all psychology. Suppose we try the physiologist, i.e., look into the eye and its nervous connections. The physiologist also is a bit surprised to hear about the world of light and music at this level. He points out that all there is to it are nerve impulses. Light waves aren't light, and sound waves aren't noisy, and neither of them enter our bodies at all; they just set up nerve impulses over the optical and auditory systems. The nerve impulses also aren't light and make no sounds. The light and music are things that go on within the individual. When we go to psychology, we hear about "visual perception" instead of "seeing". The sensory process, including stimulation, the eye and nervous system, is one part of the process, but learning and memory have just as much to do with visual perception as the sensory process and even emotional and other motor responses are involved. It is the difference between "seeing", and "looking", or between "hearing" and "listening". We must learn to accommodate, learn to converge the eyes into a team. We must learn that the retinal image is to get our attention. Every part of the visual process must be learned and after having learned it, we only can see what we know, except that little by little we can learn more and, hence, see more.

Dr. R.W. Sperry, Hull Anatomical Laboratory, University of Chicago, in an article in *American Scientist* says, "The principal function of the nervous system is the coordinated innervation of the musculature. Its fundamental anatomical plan and working principles are understandable only on these terms." Further support for this point of view may be found in the study of brain architecture. One searches the cerebrum in vain for any structures that seem designed for the purposes of forming,

cataloging, storing, or emanating copies of the outside world. If any scheme or plan at all is evident in the complicated fiber associations and nuclear interconnections of the brain, it is a design patterned throughout for governing excitation of the final common motor pathways. It is readily apparent that the sole product of brain function is motor coordination. To repeat, the entire output of our thinking machine consists of nothing but patterns for motor coordination.

W. G. Coogby and M. Reinhold, publishing in "Brain", September 1954, suggest that "...parts of the body, voluntary movements, sensations, cognitive behavior and ideas are not 'localized' nor 'represented' in the brain. Nothing resides in a nerve cell save its chemical constituents, physically disposed. In nervous tissue there are no sights, nor sounds, nor movements. Above all, there are no models of images. Nervous tissue does no more than transport nerve impulses. As life proceeds, the brain is trained. This training, which is, fundamentally, the acquisition of, use and understanding of symbols, results in superior powers. But the acquisition of such powers carried with it the possibility of disability."

There is a statement by Professor Ward Halstead that vision is the dominant process of development in the human organism. The four factors of intelligence as determined by Halstead were visual. At least six of the seven factors of intelligence by Thurstone were visual, and probably the 7th. Man uses his vision for quite different goals from those of the chimpanzee. Man seems to use his vision to give him ability to gain experience in ways impossible to the chimpanzee, by synthesizing and abstracting. Many years ago, Professor Samuel Renshaw made two assertions, that "Seeing is learned" and "seeing is motor." The work of G.N. Getman was not so well known about 20 years ago. He introduced a whole new train of thought in our profession. I look at all of you, the work you are doing, your methods, the wealth of materials you are making for our wonderful profession. Perhaps some time in the future I will be sitting on a "pink cloud" and shall proudly tell my friends there – "That is one of my boys, or girls, as the case may be."

I wish to reiterate our points of view, giving credit to men who taught us. Professor Samuel Renshaw pointed out many years ago that seeing is learned and highly susceptible to practice effects. Dr. Nafe pointed out that, "All we can do is to learn more and therefore see more." The Arabian ophthalmologist who repeatedly said, around 1500, that, "The eye cannot see what the mind does not know"; there is a respectable mass of evidence that seeing is motor, or in modern mode is called "output". I reiterate that vision is the process of synthesizing and abstracting the

experiences of the organism and mobilizing those experiences on the instigating trigger of a visual datum.

This substantiates Halstead's statement and fits in with the work of W. Gray Walter. It is an acceptable concept to people working in child development from Magnus on down. It lends verity to the visual training work being done clinically, not as "muscle exercises" or "eye exercises", but the reorganization of movement patterns. As Renshaw said, "All we can do is to arrange conditions for learning so that he, by his continued efforts, may teach himself." That is what we call Visual Training – the arranging of conditions for learning degrees of freedom in the visual process to absorb stress. As Ward Halstead said, "You cannot talk vision and intelligence, for they are one and the same things. When you investigate into vision, you are investigating into intelligence." No wonder that the recipient of our care and guidance can proudly tell the world; "I am not dumb."