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THE SWEDISH SYSTEM OF GYMNASTICS  
AND  
ITS RELATIONSHIP TO  
CORRECTIVE PHYSICAL EDUCATION AND PHYSICAL THERAPY

by

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## INTRODUCTION

The work done for and with the atypical person, in physical education and its closely related field, physical therapy, has been a subject of interest to me for some time. Therefore, in choosing my topic for this study, I looked for a subject which would enable me to study a part of physical education which would have a direct relationship with the therapeutics of corrective physical education and physical therapy. The acquisition by the Woman's College of the Amy Morris Homans collection from Wellesley College made available material on the Swedish system of gymnastics, developed by Per Henrik Ling and his successors.

The purpose of my study of Ling's Swedish gymnastics is to show how, from his medical gymnastics, the field of corrective physical education developed, and how the medical gymnastics and physical education, through corrective physical education, are related to physical therapy. To do this it is necessary to study the physical education of the Ancients and those related fields, the biological sciences. It is also necessary to study the history of Sweden about the time of Ling and to disclose the situations that existed, and how they might have influenced Ling's work. A study of other systems of gymnastics which were contemporary with the Swedish system will allow for comparisons

and contrasts, and, thus, will permit me to form opinions about the importance of Swedish gymnastics and its relation to physical therapy, corrective physical education and physical education as a whole. The purpose of this study is, also, to trace the development of Swedish gymnastics from their inception by Ling to the United States, and how, once introduced to the United States, the system developed here, and how it influenced physical education in the United States.

## Chapter I

## Section I

Long before recorded history, when man was struggling for cave survival, physical education was in existence as the only real form of education. To the primitive human being, survival was of prime importance, and in his culture, survival meant being the most fit--the most physically efficient and able of all creatures. To be able to endure the hardships and demands of his world was his only concern. His play was his work, for the games, dances, and rituals of his society all centered around his physical being and physical strength. A man's security and his ability to be recognized as a member of the group depended on his physical prowess. To this end, education of the physical was foremost in the primitive's education; in fact, it was his education.

Education of the primitive man was not at all organized as we think of it today; yet there was a definite training, or education, of the child. A child might begin by imitating his father's actions. As he grew older, the child was taught the details of hunting and survival by his father, and in this manner, the child was educated.

At first, all education was centered in the home, for it was the responsibility of the parents to teach their child; but, as the culture of the society became more complex, certain individuals developed greater skill and proficiency than others. These gradually became the leaders of the various tribes, and they formed a more select group of educators--the "professionals" of their time. Religious and social rites developed and the religious or social leaders became the authorities on the form of ceremony used for each rite. So some organized education developed as these leaders became the instructors for these rites. This was

especially true in the initiatory or puberty rites which almost always were formal in their manner and required definite instruction. A child received his education for adulthood initiation from priests, medicine men, and tribal chiefs, and was thus "formally" educated. Until this adult threshold was reached, however, the child learned primarily by imitation in the games he played and in his work--doing as he saw others do, and by trial and error, learning what was pleasant and useful, within the realm of the customs of his tribe, and what experiences were not to his advantage.

Even with the organization of some parts of his education, the primitive man continued to learn basically by the laws necessary for survival and his education remained almost entirely physical for many hundreds of years.

As tribal living developed and one tribe conquered its neighboring tribes, civilizations began to emerge. These early civilizations centered around the Mediterranean and what is known today as the Middle East. In this area the climate was suitable for fairly easy survival with its warmth and possibilities for the growing of food crops as well as clothing crops, such as cotton. In this region, Egypt, the "birthplace of civilization", (28:13) became a nation and developed an early system of formal education. Reading and writing were the major aims of education, and an alphabet was developed by these ancient people. This formal education, however, was more for the wealthy and noble classes. The child of the lower class still learned primarily by imitation, and was trained to follow the same occupation as his father. A child could only break the class barrier and rise to a higher station if his family could send him to school, which required a tuition, to learn reading and



writing. But, here at least was a chance to gain status by a means other than physical. Due to the fact that the noble and wealthy classes were less interested in physical strength so long as they had others to do the more strenuous work for them, physical education did not play as important a role in ancient Egypt as it was to play in Greece in future years.

Physical education in Egypt was largely dependent on the occupation of the individual. Those engaging in heavier labor had more physical activity, and these were generally members of the lower classes, with the exception of the military. In the upper class families, education became a process of instruction by private tutors, often slaves. Swimming was a favorite activity for the children and adults. Because the Egyptians were not usually a warlike people, and therefore, did not often find the need for great physical strength to meet military requirements, they did not develop any special system of physical training, but, instead preferred sports which fit in with the type of society they had developed--a carefree sort of life. The military used games and sports of a more vigorous nature to develop skills used in battle. Hunting was a favorite sport, and both the noble and military classes participated in it for pleasure, while the lower classes participated in the hunt so as to supply themselves with food. (28: 14-16)

According to historians, (28:16) one of the most important roles played by physical education in the Egyptian's life was in his religion. Wrestling, as a sport, and dancing were an important part of most of the religious festivals and other ceremonies. Women as well as men participated, especially in the dancing. Many became professionals and danced professionally before the wealthy and noble classes. On the other hand the wealthy and noble classes danced only at religious festivals, and

left folk and other dancing to the peasants and professionals.

There was no physical education as a regular school subject in the Egyptian civilization. The only formal physical training, outside of the military, was through the encouragement of a child to develop a specific skill.

In another civilization of the same period, Mesopotamia, physical education received even less emphasis than that given it by the Egyptians. Except for military and religious activities, physical activity was given little consideration, and only the laboring classes received much activity, except for some swimming instruction given to the children of the nobles. In Assyria and Babylonia, parts of Mesopotamia, some of the art uncovered in excavations has revealed that wrestling and boxing did have a part in contests. (21:6)

In contrast to the nations bordering on or near the Mediterranean, the early civilizations further to the east around Persia were far more warlike and, consequently, put more emphasis on the physical in their educational development. The fact that Persia and its immediate neighbors were ruled by the military was the primary reason for this. Emphasis was placed on training for greatness and for the glory of the state. The climate and terrain were major factors for physical strength, also, as the country was more rugged than that of Persia's neighbors.

The Persian method of educating its boys was somewhat of a forerunner to the method of the Spartans of Greece. The child was taken from his home at six years of age and began rigorous physical training in those skills required to become a good warrior. The boy faced many ordeals to test his endurance, and the result was a tremendously strong military power in all of the Persian Empire. The failure of the Persians

to recognize the value of education of the intellect, too, led to their eventual downfall long before the power of their neighbors began to decline.

To the east the Indian nation gave very little emphasis to any physical education outside the military class and that of the religious dancing girls. In India, however, some rules of hygiene, later to be used by other nations, were formulated, and the game of polo developed here. Religion played a major part in India's attitude towards physical activity, as did a very energy-sapping climate.

In the Far East, the Chinese people were probably the earliest of all the primitive peoples to gain some semblance of civilization. From its earliest development, until very recent years, China has been a very isolated and reasonably peaceful nation. Her system of education was for many years strictly one of learning by rote, and no attention was given the individual. Early China stressed physical activity; but, after Confucius, the development of intellect became far more important, and physical education was no longer considered of much value except, as usual with all nations, in a military capacity. Even with the decrease in interest in physical education, a system of exercises, greatly resembling the system to be developed by the Swede Ling over 3000 years later, was recorded. These exercises, states Rice (21:7) in his history, had no influence whatsoever on Ling's system. The art of boxing, also, developed in China, as did some forms of football and other kicking games. Dancing in China held an unusual significance, especially in the very early years of the civilization, for it denoted the high standing of a man if he had great skill as a dancer. This may have been due to the fact that many early Chinese dances had a military



character to them, something not so true of other ancient civilizations.  
(28:21-26)

The Eastern and Middle Eastern civilizations of Egypt, Mesopotamia, Persia, India, and China, and the Hebrew nation which subordinated all education to religion, developed various systems of education, mainly through their military, physical education, and their own systems of government. But each was a very separate unit and with the exception of the Hebrew nation, seldom, if ever, strongly influenced each other, even though there may have been similarities in their cultures. It was not until the development of the Greek civilization that a system of education and physical education that was to have far-reaching consequences was formed. It is from the Greeks of ancient times that the Western world received many of its fundamentals of education, and, in particular, physical education.

The Greek civilization has long been considered the real beginning of our Western culture. By virtue of its location, the influences which the nations to the east had on those to the west were brought through Greece by travelers, or taken by Western travelers to the East via Greece. Greece, however, did not develop, as did the earlier civilizations, into a fairly unified state, but was, rather, a group of states. These were known as city-states, each with its own systems of education and government, but all with a common culture and background. Of all the city-states, Athens and Sparta have become the best known, and have created the greatest lasting influences on modern civilization. The Greeks were the first to give emphasis to individuality and to develop a real appreciation of philosophy and of the problems facing education. With the advent of this kind of thinking, the chance for real progress in education and, consequently, physical education, was born and nurtured. (28:40-42)

In the early Greek history, during what is referred to as the Homeric era, the importance of physical education was especially acute with the many wars fought between the various city-states and with neighboring peoples. Both the Iliad and the Odyssey divulge the emphasis put on strength and wisdom. The "man of action" (28:43) was foremost in the minds of the early Greek. It was his qualities of strength, endurance, and skill in the art of combat, plus the development of the mental capacities, that the Greek worshipped and desired in himself. In these years imitation in play was the education of the child, and for the adult there were many festivals at which various athletic contests were held. These contests included wrestling, races, and javelin throwing. The Olympic Games were not to begin for many years yet, and the majority of these early festivals were religious in nature; but, these gatherings, as any gathering, were an opportunity to show off athletic skill and strength--something these early men delighted in doing. (28:43-44)

As Greece grew in power, its governments lost their earlier simplicity and developed varying degrees of democracy as they increased in wealth and power. The place of education as a major factor in the lives of the people increased in importance, and was made more public.

In Sparta, a powerful government with militaristic foundations evolved. The result of this was a rigorous and highly demanding physical education program--a program to build a strong, healthy, and obedient citizenry to work and fight for the glory of Sparta, disregarding, to a great extent, other aspects of education. This did not refer to men alone; the women, too, were expected to be in the best physical condition in order to bear sturdy children for the state. While the boys were taken from the home at six or seven years of age to begin their military

training, which would continue until they were young adults, the girls were, also, being given physical training at home. These girls were taught to have no sentimental or motherly attachments to the children they would have. To have a son die for Sparta was a great tribute to a Spartan mother. (28:47)

The Spartan boy grew up in a military atmosphere. His training was accomplished by means of squads, in which a group of boys of the same age were led by an older, more experienced boy, all under the supervision of adult leaders. Their schedule was hard and included a great variety of gymnastics, military drill, and games, plus such activities as swimming and riding. Dance, for religious reasons mainly, was, also a part of their curriculum, and was sometimes done in full armor before entering battle. In the last few years of his education, the youth spent much of his time with older men, sometimes in actual combat. According to Leonard, (13:19) this matured his understanding of daily public affairs.

Sparta, even more than her sister city-state, Athens, fulfilled many of its aims, educationally, but, unlike Athens, Sparta's aims were greatly limited. In fact, they were restricted to one outstanding ideal--the distinction of Sparta as a strong, conquering state with complete subjugation of all of its citizens. Sparta was more of a totalitarianism than a democracy. The State decided the fate of a child and dictated the life of its citizens.

In Athens, the father, not the State decided on a child's fate--whether it would be allowed to live, or would be left to die at Nature's hands on some hillside. The family, not the State, determined most of the schooling of the child. The primary purpose of education in Athens

was more than just physical or military. Unlike Sparta, Athenians set their aims on a much broader scope of education. They desired mental and social, as well as physical growth.

The boy's education was begun at about the same age as a Spartan boy's education; but, rather than live away from home, the Athenian boy went to school from his home every day, usually accompanied by a family slave who protected the child. Gymnastics and games were a part of the child's education--an important part, especially in the early years of Athens' growth. However, grammar and music were given as much emphasis as gymnastics, for Athenians felt that well-rounded citizens were most important in the maintenance of a powerful and democratic government.

To the Athenian, as to the Spartan, a beautiful and graceful body was considered the greatest gift a man could possess. In contrast to the Spartan, the Athenian saw the perfection of the physical as a means to develop all aspects of the individual, not just as a means to develop great military strength. "It was not the cultivation of the physical alone, but rather the development of the individual qualities through the physical." (28:55) Due to this philosophy, the Athenians were conscious of physical fitness, and the State maintained gymnasiums for men of all ages to exercise and keep their bodies in excellent condition, not just for military reasons, which were considered important, but for aesthetic reasons, too.

To the Spartan, it was the "man of action" that was worshipped and glorified; to the early Athenian, it was the "man of action" and the "man of wisdom", equally, that was to be admired and used as an example for all to follow. (28:55)



Later, Athens neglected the physical to develop the other attributes in a man. The government, through the declaring of many new citizens, had come under the control of those of wealth and power, pushing out the control once held by those of noble birth alone. To develop one's intellectual capacities so as to gain wealth and distinction became more important than the well-rounded personality. The athletic feats, once proudly displayed by all, were now performed primarily by professionals. The gymnasiums became pleasure palaces for lounging and perhaps some light exercise by the younger men.

From the new interest in professional athletes came a new kind of gymnastics. Medical gymnastics, basically for analyzing skill and for preparing for athletic contests, were the results of the new athletic trainers who were popular as supposed experts on conditioning a man, in particular a professional athlete, for contests involving strength and endurance. Much controversy arose as to whether these men were an asset or detriment to the medical profession of the day. In light of what was known of good medical practices, the early athletic trainer was probably as well qualified as a doctor to decide on diets and exercises. (28:71)

The Greek civilization crumbled and was conquered by the Macedonians to the north. They had known great power and many riches, but had failed to continue to recognize the value of all of their advantages. In Athens, especially, the desire for a sound body and sound mind had given way to greed for power. The physical aspect deteriorated, and with it, the once powerful influence of the Greek people. Before she fell, Greece had attained heights of civilization never known in the world before. She left behind her a culture and a philosophy that would have

a lasting effect on the nations and peoples that would follow her. In education, she had reached a remarkable level, and laid the foundations for the world to build upon. Physical education was an integral part of her education growth, and some of its most basic foundations lie in the ancient Greek civilization.

As the Greek civilization was decaying, a new empire was being born to the west on the Italian peninsula. This new civilization was to be one of practicality. The Athenian Greek idea of beauty was considered as useless to the early Roman. Instead, he believed in development of the body and mind to suit the work of the man, not for the development of the body for its sake alone. The early Roman had more in common with the Spartan in this respect. Health, strength, and resulting military power were his reasons for physical exercise, and, with the exception of a smattering of literature, all other aspects of education were considered more or less useless as far as the State was concerned. The Roman child was educated at home by his parents and only when he reached the age of puberty did he begin to receive any form of public education. This was obtained through his father's instruction at public gatherings in the forum, and was also obtained by association with other youths of his age on the military field. (28:78-79)

Since war was of major concern in the early Roman Empire, the young boy's education centered around those activities which would make him a worthy soldier of great physical and moral strength. The skills of riding, handling weapons, and swimming were considered essential. Ability to understand and appreciate politics and business were a part of the well-educated boy's world, too. With his father's guidance, the Roman boy learned all of this and learned it well.

Everything about his education was practical. Even his religion, which was of prime importance to the Roman, was practical. The gods were worshipped, each for his own value--the god of war, Mars, to bring victory to the soldiers in battle; the god of the hearth to bring prosperity to the home. There was no beauty or great faith shown in religious rites--only a business-like approach; a "you give me and I'll give you" approach. The boys were trained for warfare in the shadow of a temple to Mars on a plain field, lacking any frills unnecessary for combat.

With physical education only serving as a military power objective, the Roman festivals were seldom athletic contests. Racing of horses and chariots were popular, but, otherwise, any competition was mostly restricted to the gladiatorial combats that became so popular in the later Roman era. Ball games were perhaps the only games that Romans participated in for the pure pleasure of playing, and even many of these had a rather rugged nature. In these ball games, all utilizing only throwing and catching, can be found some of the bases for our modern day ball games. One game, known as harpastum, was a keep-away type which included use of tackles and wrestling holds among the players--several of the techniques of modern football and soccer.

(28:80-81)

When the Romans eventually conquered Greece and came under the influence of the Greek philosophy of education, the Roman educational system acquired an intellectual note. Literature and philosophy were now considered the major subjects of study. Physical education, once so important, now lost its rank. The military of Rome had changed from the citizen-soldier to a paid army of professionals. Good physical condition was no longer considered of great value. The

Roman had never been a lover of competition and even the introduction of Greek gymnastics never aroused much interest. The gymnasiums were, much as in later Athenian years, merely an amusement house and gathering place for the men. Physical training was for the soldier and the professional athlete. Exhibitions of physical skill centered around the circuses and gladiatorial bouts.

The Romans were concerned, to some extent, with health, in a purely practical way, and to this they made some lasting contributions. The famous Roman baths, although used primarily for pleasure, had a greater value than any Roman ever realized. From the knowledge acquired by the Romans as to the value of hydrotherapy was formed the basis for modern use of water in treatment. Health gymnastics enjoyed a fair amount of popularity in their use of diet and exercise to prevent ill-health or to aid in the recovery from illness. They were often a substitute for medical remedies, and probably had far more medical value than most of the medicines of the time. Rome, also, developed a very advanced system of public sanitation and protection from disease, which was to have lasting influence on the world.

One of Rome's great contributions to the field of physical education and athletics was the trainer, a specialist in physical conditioning and diet. As in Greece, these men became prominent as professionalism in athletics grew. Many of the earlier Roman trainers were, in fact, Greeks who were enslaved when their nation was conquered by Rome. Their value was discovered by their masters and many became prominent men, either as slaves or as freedmen. One of the greatest of these Greeks, although not a slave, was Galen, who eventually became the personal trainer of the soldiers of the Roman Emperor Marcus Aurelius. He



made many beginning contributions, not only in physical training methods, but, also, in the fields of anatomy, physiology, and physical therapy. With Galen began most of our sciences dealing with the human body and its functions.

With the fall of the Roman Empire began a period of some 1000 years in which asceticism, an outgrowth of the new Christian religion, was to have such a great hold on the minds of men that physical education as such was to be almost completely lost to the culture and education of the world. Physical education was concerned with the development of the body, and to this idea, asceticism was violently opposed. The physical body and all thoughts or actions concerning it were evil and to be forbidden. The Dark Ages had arrived, and with them, the greatest void in the history of the progress of education and science.

The end of the great Roman Empire, also, brought to an end the so-called ancient times. Much had been accomplished. From men living almost as beasts through the period of tribe developments and into the eras of the creations and devastations of great empires, the world had matured tremendously. Civilization had gained a foothold and was spreading. Many of the peoples of the world still lived as barbarians, but with the birth of the great civilizations of Egypt, Persia, China, Greece, and Rome, the primitive way began to decline and gradually vanish. Behind it all was education. As educational means and methods increased, so the nations of the ancients grew and became prosperous. And the first real education was physical education. Tribes grew and conquered other tribes because of their physical prowess. As more and more tribes came under a central rule, nations developed. Once established, not all the new civilized peoples stressed physical education as such. For some, as in China, natural barriers

prevented outside interference and once the ruling power was established, their energies could be turned to include other things; in others, as Egypt and India, climatic conditions as well as no great desire for extended power, in general, reduced the need for formal physical training. The great mass of inhabitants of all three of these civilizations consisted of extremely poor peasants who labored hard, physically, to exist, thereby providing them with much physical activity. But, in all these nations, the nobility did participate in physical activities, whether stressed as physical education or not. Persia was the exception to these eastern civilizations in that she stressed physical education, for military strength, above all else. Persia was a warlike nation in a rugged climate and terrain. To remain strong, her people had to be strong.

These early eastern civilizations were influential in their contribution to world culture and development. But, their influence was minor compared to that made by the Romans and Greeks. Education reached its heights, prior to modern times, here (especially in Greece), and physical education was an early primary part of this education. In Greece, the Spartans were concerned with physical education as a means to attain strong, healthy, and able citizens to build and fight for a great state. In Athens, the idea of a beautiful, well-developed body to make up a part of the well-rounded man was foremost. In Rome, the basis of education was physical education to develop strength and power to conquer and build a great empire. Greece and Rome were both built on a foundation of physically strong and sturdy people. When power and wealth created a lax attitude towards education of the physical, the empires declined and were finally conquered by other peoples of more hardy natures. When physical education was important,

the nations grew; when physical education was no longer needed, they fell.

## Section II

In the same era that many of the foundations for the science of physical education were being laid, other sciences, which were to be closely tied with the field of physical education, were experiencing their early developments. Historically, the sciences of anatomy, physiology, kinesiology and physical therapy have several common founders. Of all the great names of history involved with these sciences, Galen is the man who was the first real student.

Anatomy is perhaps the oldest of the sciences. It has its beginnings in the later Greek era with Herophilus and Erasistratus, who studied the brain and heart. But, the first notable progress began with Galen in the Roman period following the beginnings of Christianity. He left many records which attribute a great number of anatomical discoveries to him, even though his apparent disregard for names of various parts of the anatomy has made it rather difficult, at times, to discern to what, exactly, he was referring. Galen dissected a number of animals, and perhaps a few human beings, in his experiments, and gained a fair knowledge of the skeleton, the brain, and the spinal cord, plus something of the functioning of the nerves. He also understood the structure of the blood vessels fairly well, but knew little or nothing of circulation. (2:4-8)

In the field of physiology, Galen was the first physiologist of any note. Some of the early Greeks had made a few discoveries, but all were strictly from observation and had no scientific background. Galen, in his dissections, studied more than just the structures of the body; he was also greatly interested in the functioning of these

various structures, especially that of the nerves and muscles. He learned quite a bit of the control of the nervous system on muscular contraction. The function of the kidneys was one of Galen's great physiological contributions, although his theories concerning the formation of urine and its connection with the rest of the body tissues were rather absurd. (7:8) The other systems and organs of the body came under observation by Galen, and he made many discoveries, but he also had many erroneous ideas, and let religion play a great part in his explanations, especially with respect to circulation.

Kinesiology, as a science, did not gain recognition until modern times, and Galen's part in the development of this field was made chiefly through his anatomical discoveries, for anatomy is the "parent" of kinesiology, or applied anatomy. Aristotle made some of the earliest observations of major importance to kinesiology when he noted the importance of the center of gravity and observed the lever action in flexion and extension of limbs by various animals. Archimedes later postulated the floating body laws that were to become so important to physics and kinesiology. Although Galen cannot be acknowledged as the father of kinesiology, as he is of anatomy and physiology, he did study the positions and actions of muscles in connection with his other studies, thus making his formal contribution to kinesiology. (30:163-173)

Physical therapy, as the fourth science with important inter-relationships to physical education, had its earlier beginnings in primitive times with the use of the sun's heat as a healing method. As a science, however, physical therapy began, more or less, with the Greeks at the time of Hippocrates. Exercises and diets were the first



important therapeutic treatments for the prevention and correction of illness and injury. The basis for the exercises came from the gymnasiums and military of the time. Thus, medical gymnastics were the first of the physical therapy methods to receive emphasis by men of knowledge. Even so, these exercises seldom had real therapeutic value as today, for too little of the structure and function of the body was understood to permit truly organized and scientific treatment of body ailments. Sun, or heliotherapy, and water, or hydrotherapy, were used in these times with some success, but with little true understanding of their real value. With Galen and his contemporary, Caelius Aurelianus, the use of exercises and massage gained some scientific foundations. Both recognized the therapeutic value of exercise and massage, and put down some sound principles in their writings. Galen, especially, saw the value of easy to difficult progression in exercising the entire body, and used both active and passive movements in his gymnastics. For massage, he had divisions according to amount and quality which are still used in a fashion today. (3:7-17)

With the death of Galen and the coming of the Dark Ages, the further development of these closely related biological fields came to a standstill, as it did in physical education. All had a common bond, the physical, and asceticism thoroughly discouraged any dealings with the physical.

Up to this time, the progress made in each field had direct relationship with that made in the others. Anatomical discoveries led to physiological discoveries; understanding of anatomy and physiology led to better use of exercise and massage in therapeutics; and all provoked

an interest in the study of the movement of the body, or kinesiology. This relationship has continued into modern times, and physical education's relations with these sciences has become even greater. The directness of the relationship was predicated on the fact that a good many of those who were the early students of these sciences were, also, the physical educators of the day. Those men interested in perfecting or correcting the physical conditions of men were the ones who wanted to know more of the structure and functioning of the body and its movements. They were the men who were the physical trainers of the times and gave impetus to the scientific study of man--his structure and function. In the years up to and through Galen's life, these fields were, in a sense, one, for a student of one was usually a student of all. History has not changed the close ties of these sciences, but it has created specialists in each field, each learning from the other, but not necessarily being a student of all.

The ending of the Dark Ages, around 1500, saw a great rebirth of interest and study in the fields of anatomy, physiology, kinesiology, and physical therapy. Physical therapy, as a separate field, was not really to come into its own for a while yet. Technically, neither was kinesiology, which had to wait for the development of moving pictures before becoming a detailed science. However, several great ideas or theories were developed and proved, mainly by physiologists, long before motion pictures, and these had much bearing on the studies of kinetics and kinesiology.

Galen was the first great student and teacher of the human biological sciences, but another man was to change many of Galen's

theories and prove, that, although Galen was basically right about many things, he had, also, made many incorrect statements and had missed many of the finer details. This man was Vesalius, who lived during the 1500's and was to become the greatest anatomist of all times. Vesalius' book, Fabrica, still remains as one of the most detailed and complete books of anatomical drawings in existence. Vesalius, after studying human cadavers, sometimes robbed from graves, soon became aware of the errors in Galen's works. It was not easy to change people's ideas, and to the medical profession of Vesalius' time, Galen was the foremost authority on the human body and its functions. It took time, especially as Vesalius was quite young, but his experimental work proved the discrepancies of Galen's work, and began a new era of study. (2:20-27)

Leonardo de Vinci, whose life briefly overlapped that of Vesalius, made some studies and did some very accurate drawings of the body structure. He also discovered several important facts about muscle tone and contraction. De Vinci, however, was interested in a great number of fields besides medical science and reached the rank of expert in most of them, so his contributions to medicine, though great, have not been as widely recognized as those of Vesalius. (6:14-16)

Besides anatomy, Vesalius also made contributions to physiology in his detailed descriptions of techniques and results of various experiments on live animals. This was especially true in his observations of the muscular and, to some extent, the nervous systems. The great advances were not really begun, however, until the true circulation of blood was discovered by Harvey about 100 years later. After this, much which had been heretofore unexplainable and left to religious

or superstitious explanations, was now understood. From this knowledge and the invention of the microscope a few years after Harvey, gains were rapidly made and are still being made in the field of physiology.

Kinesiology's progress as an individual science was slow. The findings of Galileo, Newton, Borelli, and the Weber brothers, concerning gravity and the laws of motion, prior to the days of moving picture photography, had much bearing on what was known and understood of human movements. After motion pictures, kinesiology "arrived", and today the scientific analysis of various motions can be studied in detail.

Physical education is an historically important field in the growth of civilization. The general relationship of physical education to various sciences which deal directly with the human body is very important and a lack of knowledge of these sciences would make physical development, as the true physical educator desires it, almost impossible. Also, it has often been questions, concerning various aspects of the human body and its function, in the minds of those interested in physical development that have led to the studies and discoveries in the biological sciences.

A number of systems of physical education have been devised by men interested in physical development. These men studied the body and its needs, and utilized their knowledge to develop a means of creating and maintaining good body development and usage. One of the outstanding systems was that devised by Per Henrik Ling--the Swedish system of gymnastics. This system had a great influence on the scientific development of physical education, especially the part



dealing with the corrective and remedial aspects of the physical education program. The Swedish system, also, formed the basis for the therapeutic exercises used in the field of physical therapy--a field with very close ties to physical education.

To know and understand the reasons underlying the development of a particular system, educational or otherwise, it is necessary to know something of the group for which or by which the system was devised. The Swedish system of gymnastics was developed by Per Henrik Ling for the Swedish people. To understand Ling's reasons for developing his system when he did, it is necessary to review a part of the history of Sweden.

## Chapter II

Sweden's history dates back to prehistoric times; however, the question as to her part in the development of world culture previous to the 17th century has provoked quite a bit of discussion. Until this time, her role in world affairs was quite insignificant. According to Andrew Stomberg, (25:17) expert on Scandinavian languages and literature, in his history of Sweden, she just drifted along, seemingly content in allowing the other nations of Europe and the world to set the pace and determine the fates of the world population.

In the 17th century, Sweden began to feel her way into the world. Her rulers began to lead her into more aggressive wars. She ceased being isolated and used as a pawn by her neighbors. With the reign of Charles IX, known, also, as Karl IX, the foundations for a politically strong Sweden were laid. Charles and his son, Gustav Adolph II, were strong rulers, popular and capable. They gave their people a will to establish the Swedish nation as one respected among nations. Gustav II delegated new power to the Riksdag, composed of four Estates (nobility, clergy, burgesses, and agricultural interests), which was to lead to the great strength and influence of this legislative body in the "Era of Liberty". Sweden became a center of strong anti-Catholic feeling and a champion of the Protestant cause during the reformation years which extended through the 17th century. She eventually established the Lutheran Church as the State church. With the end of the reign of Charles XII in 1718, the great attempt of Sweden to reach a station of world power came to a close. (25:507) During these approximately 100 years, she had gained much and lost almost as much in wars with powers such as

Russia, Poland, and Denmark. Her disastrous and sad end to the hopes of great strength came in a war with Russia in which Sweden was deserted by all her allies and forced to make peace by herself at Nystad in 1721. (25:512) Sweden had only one desire at this moment--peace. Thus began the "Era of Liberty". (25:318-334, 507-512)

The "Era of Liberty", as it is known in Swedish history, was a period covering slightly less than fifty years of the 18th century in which the Riksdag realized the greatest power it had ever known. Charles XII, having never married, left no provision for his successor to the throne. Quick action by Ulrika Eleanor, Charles' youngest sister, brought her to the throne, but, due to popular feeling, she was forced to declare, before being crowned, that neither she nor anyone else had a hereditary right to the throne. To insure security against usurpation of power by the crown or the Council of the ruler, it was decided to give all real authority concerning internal affairs to the Estates, or Riksdag. The ruling monarch and the Council would retain the right to decide matters concerning the defense of the nation. Changes were made in the Estates themselves, which established it as the only parliamentary government of its kind, outside of England, in Europe. The major classes of the population were represented in each of the four Estates and rule was by these interests. But the peace Sweden so greatly desired was not to last. The sudden new power of the Riksdag led to the formation of parties which bitterly opposed each other. Greed and ambition destroyed patriotic interest in the welfare of all of Sweden. Power-happy men began to tinker with the fate of their nation by making foolish alliances which eventually ended in the wars that took over

one-third of Sweden's territories from her. (25:513-562)

In 1771, old King Adolph Frederick died and a new king, Gustav III, stepped to the throne. Gustav had already displayed his strong will by influencing many of his old father's decisions. When he took the crown, Sweden began to realize that here was a ruler of the old regime. Held in check during his father's reign by the party conflicts, Gustav now took full advantage of his new position. Greatly influenced by the French, in whose court he spent considerable time, Gustav planned and carried out a "coup d'etat" to overthrow the rule of the Estates and re-establish the monarchy as supreme authority. The nation rejoiced in the news of the downfall of the party rule. Sweden had progressed far in the "Era of Liberty", gaining prominence in several fields, accomplishing much in parliamentary procedure and know-how, and, to a certain extent, breaking down class barriers, but, the corruption of the Riksdag turned the people, temporarily, against this type of government.

As Gustav ascended to the throne, war threats were coming from all sides. Gustav proved his ability to rule by almost daring Denmark to break the peace, and with France standing behind him, threatened Russia, Prussia, and Denmark with war with France if they should care to begin hostilities. Even England was convinced to keep out of any alliances with the Swedish enemies. The Swedish people, their courage renewed, rallied behind their king, offering a formidable foe to any with aggressive ideas towards their native land. Fortunately, at about the same time, Russia's attention was diverted by a resumption of hostilities with Turkey, plus internal strife. Sweden now had time to

establish a new constitution which gave the king the right to share legislation with the Estates, and at the same time restricted the king's right to declare war without legislative consent. This sharing of power was a direct outgrowth of experience and the hard-learned lesson that, to prevent reckless domination, certain guarantees had to be formulated. The weak spot was the lack of control over financial matters given the Estates. A noted Finnish army officer stated it aptly when he said, "the Lord had entrenched himself well." (26:259) Sweden was set to begin a new era in her history; a period to be known as "the Gustavian Era"; a period of ups and downs before final peace was to come.

Gustav began to work energetically towards the rebuilding of Sweden. Unlike his predecessors in the period of Sweden's short rise to power, however, Gustav was not especially adept at administrative affairs. In the face of crisis he could be a great leader, but the details of running a government bored him. Excitement and pleasure were his life. His enthusiasm gone, Gustav proceeded to find other diversions. Life at the French court had been to his liking, so he began establishing a Swedish court modeled after that of the French. He also brought other cultural reforms to Sweden, especially in literature and the theater. These fancies cost money and Gustav spent it freely. In the early days he had worked hard to re-establish economic stability with drastic reforms in the financial situation; now, he was wrecking this same attempt at economic prosperity. Ambitious, adventure-loving men began to take advantage of the king, who believing he had lost his former popularity with his people, had become pompous and aloof. The morals of the nation began to decline at an alarming rate. Drunkenness, evil, poverty, and disease became



increasingly prevalent. Dissatisfaction with the government began forming, but Gustav just restricted the right of freedom of speech, and ended open criticism. The king's pride was hurt by the criticism. To restore his popularity, he started looking for a way to make the people once again admire his leadership. In the field of foreign relations he saw a means of restoring himself as the leader of the nation in the people's eyes.

The king's first move towards regaining his former status with his people was to attempt to gain the Russian Tzarina Katharine's support in a plot to force Denmark to cede some of her territorial holdings to Sweden. Katharine refused to break alliances with Denmark. Thus thwarted, Gustav tried a new method--a grand and lavish tour of Europe to impress the European governments with his power and wealth. This only served to increase the financial problems in an already poverty-stricken Sweden. The final blow was the treason of a Finnish army officer who held a high position under Gustav's rule. The officer went over to the Russians, taking with him the loyalty of several Finnish noblemen. The obvious course was war.

By means of what some historians say was a manufactured incident, Gustav declared war on Russia in 1788, just as Russia and Turkey were renewing their long off-and-on war. (26:277) Katharine was caught completely unprepared, but favor was not to be with the king. A conspiracy among his own officers, young noblemen who hated his pompousness, forced Gustav into a precarious position. The conspirators asked Katharine, directly, for peace, and forced this peace on the king. Declaration of war on Sweden by Denmark saved Gustav from possible loss of life, and from this situation. By going personally

to the people, relating the story of the treasonous actions of the officers, and stating the present situation, Gustav rallied his people behind him and advanced to meet the Danes, who were attacking Sweden by way of Norway. Before major fighting occurred, however, the Danes were forced to agree to a truce and withdraw. England and Prussia, startled and uneasy by the obvious Russian command for Denmark to make war on Sweden, intervened. This action, and that of the officers, served the purpose for which the king had been working. He was once again the leader, the hero of his people, with the exception of the nobility whose plans had been foiled. In a meeting of the Riksdag with the king, they opposed every suggestion from the throne, greatly hampering any progress that might have been made.

The antagonism of the noble Estate gave Gustav an excuse for another "coup d'etat", which was successful and left the control of the Riksdag in the hands of the Commoners. To them the king was more than gracious, and an addition to the constitution gave certain rights to the Commoners and gave Gustav almost absolute power. Then Gustav delivered the fatal blow. He arrested a number of the nobility and practically forced the new amendment to the constitution on the Estates. The power of the king was greater than it had been for many years. His major problem was the financial one, and he managed to alleviate this somewhat, but had to admit his own incompetencies in the process. With the financial situation under control, the war with Russia could be continued.

Several naval battles, which ended with negligible results, were fought off Finland during the years 1789-90, and attempts at peace negotiations were rejected by the Russian Tzarina. However, in the

summer of 1790, the Swedes won a decisive victory over the Russian naval forces at Svensksund. This, the last major world-important battle involving Swedish military according to Svanstrom and Palmstierna, (26:289) plus failure of plans against Poland and Turkey, brought the Tzarina to terms and peace reigned once again. Gustav was again the hero and his constitution was now recognized even by the arch-enemy, Russia.

The last years of Gustav's life were spent in solitude. He, again, withdrew into himself and worked on projects of interest to him. The French Revolution had begun, and Gustav vocally supported the royalty he so loved. Any hopes of rendering aid to the French monarchy, though encouraged by Russia to remove any military entanglements with Sweden, were out of the question, since the finances of the nation had been drained by war. Attempts of the king to seek the aid of or alliance with other powers were turned down in light of Sweden's poor economic condition.

Gustav was finally assassinated by a fanatic army captain. His death ended the career of a man who had risen to the heights of popularity and had sunk to the depths of ill-will. He had done many things which were not wise and had provoked great criticism, but he had accomplished the one thing Sweden had thus far been denied. He had led Sweden to victory at the most crucial time and thus "had established the position of Sweden as a free state among the nations of Europe." (26:294)

"Gustav was dead and the age of brilliance past." (26:294) The throne of Sweden was passed to a thirteen year old boy, Gustav Adolph IV. To act in his son's stead until the boy reached maturity, Gustav had selected his brother, Duke Charles, as regent. Duke Charles was, however, a weak man and the real running of the government was left



to Gustav Adolph Reuterholm, a rather narrow-minded, tactless individual. Reuterholm was a follower of the French Revolution and changed Sweden's policy of anti-Revolution to one of friendly, although only vocal, support of the new liberty movement in that country. This introduced a new problem. Russia was angered at the open approval of the French Revolution, so Reuterholm sought to bring about the marriage of young Gustav Adolph and the Tzarina's granddaughter. The plan failed and Katharine threatened war when Sweden signed a treaty with France. Sweden, with France demanding that they take a stand against England, was forced to back down and resume marriage consultations with the Tzarina. Gustav Adolph was now on the threshold of becoming the ruler. He rejected the marriage offer, because of Russia's insistence that he allow his future queen to follow her faith in Sweden, and returned in triumph from a journey to St. Petersburg.

The reign of Gustav Adolph thus began in a wave of popularity. But the popularity did not last. Gustav Adolph was not a statesman. He thought too highly of his position and was unable to adjust to the changing times. The new ideas born with the French Revolution were sweeping Europe, including Sweden. Things had gone from bad to worse in Sweden; money was scarce. Some reforms were made in agriculture and industry, but these were not enough to keep a virtually starving nation happy. Besides the internal problems, Gustav Adolph had much to worry him outside of his own country. Sweden was caught in the middle between two great powers, Russia and England. To ally with one meant war with the other, and not to ally at all meant economic disaster. Sweden could afford neither alternative.

Gustav Adolph managed to be on friendly terms with Russia's new

Tzar, Paul, but England refused to allow anything that might close the Baltic to her. She kept constant pressure on Sweden, as chief consumer of Sweden's exports and with the threat of her navy closing off the mouth of the Baltic. For a brief period Sweden was able to relax when Russia, England, and Prussia allied themselves against France, but Prussia soon broke away and brought new threats of war against Sweden. Gustav Adolph was able to bring pressure on Prussia through England, but eventually lost her last German territories when this pressure forced Prussia to withdraw from her alliance with France. Napoleon promptly defeated the Prussians and Swedish troops were forced to withdraw from Germany.

Meanwhile, new developments began to take place. Napoleon changed his methods and decided to attack England's trade and commerce. Russia had a new Tzar, Alexander I, and by extravagant promises, Napoleon managed to win him over. To keep the Tzar happy while he finished his Spanish campaign, Napoleon used Sweden as bait. Russians must occupy Finland if Sweden refused to close her seaports to British ships. A demand that Denmark join with France aroused England, who captured the Danish fleet, and sent the Danes, who originally refused Napoleon's demand, scurrying to the French. By doing so, she agreed to help in the attack on Sweden. Russia approached Sweden with the suggestion of armed neutrality and joint protection of the Baltic. To Sweden, this would mean loss of trade with England, and after seeing the results of the English seizure of the Danish fleet, she had no choice. Gustav Adolph refused Russia's offer. The invasion of Sweden began soon after, first by the Russians, followed by the Danes. In a relatively short period of time, an amazingly small Russian force had

forced the surrender of Finland. Her flag was to fly over this country for 109 years--from 1808 to 1917. Sweden had now lost her last major possession outside of her own national boundaries, and was in a precarious position. Attention was turned to the Danish invasion, with hopes of defeating the Danes and possibly obtaining Norway. This failed, for British ships prevented the landing of the Danish troops, and even though Norway, itself, offered no defenses, Sweden was unable to invade her. An attempt was made at regaining Finland, but this failed too. A heavy war tax, plus other grievances, finally forced Gustav Adolph's abdication in 1809, after a reign of misfortunes, strife, and humiliating losses to Sweden. The military performed a "coup d'etat" that saw not one defender of the king. He was later sent into exile.

The power of the throne was never again to be as it had been under the Gustavs. The Estates again took the reins of the government and a new constitution was proposed. At the head of the government was Duke Charles, the hated regent of Gustav Adolph's youth, but forces were conspiring to prevent any Gustav heir after Duke Charles from having the throne. All known agents or followers of the Gustav (Vasa) house were thrown out of power by the revolutionaries who had been a part of the "coup d'etat" against the ex-king. The long road to peace and prosperity was about to begin.

The first and foremost idea in the minds of the Swedes was peace--peace at almost any cost. To obtain this, a successor to the throne had to be chosen, and a new constitution drawn up. After some indecision, it was decided to make Duke Charles the king, and then

elect a successor from outside the Vasa family to become the Crown Prince. A constitution was drawn up, dividing power between the king and the Riksdag, but stating that the king must always consult his Council in matters of State, something which had been all too frequently disregarded in the past.

In order to have the newly elected Crown Prince, Kristian August of Denmark, accept his position, peace had to be concluded. This peace was one of the saddest events in Swedish history, but she had no other course. With its signing, she formally gave up over one-third of her territories, including all of Finland, the pure Swedish Aland Islands, and Lapland. She had to join Napoleon's Continental System in order to gain peace with France, and, as a result, close her ports to British ships and goods. Peace on a status quo basis was made with Denmark.

The new Crown Prince arrived in Sweden with great plans for uniting the three kingdoms of Denmark, Sweden, and Norway, and of eventually withdrawing from power in favor of the Danish royal house. His plan failed for he died suddenly within a year of his election. Panic began to spread for fear of a return by the Gustavs. Favor fell on the weak brother of Kristian, but a new name now loomed on the horizon--that of the Prince of Porte Corvo, Marshall Bernadotte of France. The lots went in favor of Bernadotte when his indication that he would accept the offer, if it came, was taken as meaning he was Napoleon's choice. The Swedes were soon to realize the wisdom of their choice, even if wisdom was not the real factor in the election. Though they had elected Bernadotte because they were anxious to be in Napoleon's favor, they were soon to learn that, in reality, relations



were very strained between the two, and the offer of the inheritance of the throne was a welcome relief to Bernadotte. The English scholar, Sir Dunbar Plunket stated it in this manner: "The Swedes guesses wrong and chose right." (26:324)

Bernadotte, to be known as Karl Johan, became, in effect, the real ruler of Sweden the day he first set foot on her soil. Old Duke Charles, now Charles XIII of Sweden, was incompetent and unable to guide his people. The leader Sweden needed was found in the Crown Prince. By his first actions, Karl Johan proved his worth. He immediately decided to forget about any Finnish reconquest that the Swedes might have in mind, and set his mind to the task of bringing Norway into a union with Sweden. Realizing the mutual need of Sweden and England for relations with each other, Karl Johan made secret agreements with the British concerning the British ships in Swedish waters. This brought the wrath of Napoleon on Sweden. He delivered an ultimatum, telling her either to declare war on England or face war with France, Russia, and Denmark. Sweden declared war on England--on paper. Secretly, relations between the two countries continued.

Bernadotte now had to devise a way to carry out his scheme to gain Norway. He did not like obeying Napoleon's orders, and Norway was the way out. It offered security and defense. To succeed with his plans, Karl Johan began by making inquiries in Russia, at present an ally of France, but in fear of attack from her. The Russians were encouraging. Napoleon, himself, added the final touch by attacking and seizing Sweden's troops in Swedish Pomerania. This was all Karl Johan needed. It disclosed the brutality of Napoleon for all to see.



Talks were now formally opened with Russian Tzar. Plans were laid for Karl Johan to lead troops along the German coast as a disorganizing move against French troops. Peace was made between England and Sweden, and England and Russia. The Russians then made peace with Turkey, and the field was set to meet Napoleon's offensive on Russia in 1812. However, the alarming retreat of the Russians, which brought never-to-be-fulfilled promises to Sweden in return for their aid, followed by the great retreat of the French from Russia, left Sweden as an unimportant military power. Great Britain forced Sweden to finish the war on the Continent before any aid would be given her in her Norwegian conquest. Russia encouraged Denmark to retain Norway and keep peace with Sweden. Karl Johan was discontented, but forced, for the moment, to agree to the demands of his far stronger allies.

The chance Karl Johan and Sweden had been looking for soon came. Karl Johan planned a great part of the campaign that was to lead to the Battle of Leipzig, where Napoleon met his greatest and most decisive defeat of the campaign. Karl Johan led the norther forces in the campaign, and after Leipzig, saw his opportunity for getting Norway. Leading his Swedish soldiers into Holstein, he soundly defeated the Danes, and at the Peace of Kiel in 1814, forced the surrender of Norway to Sweden by Denmark. The final goal had been won. The Norwegians offered some resistance to the Peace of Kiel, but Karl Johan easily put them down. An agreement was reached whereby each State was to be "a free, independent realm under one king", (25:330) and Charles XIII was duly elected King of Norway. The peace at Vienna, which ended the Napoleonic Wars, separated Sweden from any direct connection with

continental Europe when she ceded Pomerania to Denmark. Sweden began a new era--one of isolation, rebuilding and growth, and eventual fame as a neutral power.

The Gustavian Era had taken much from Sweden, and had given a little. In forty years she lost almost all of her territorial holdings and gained a long coveted possession. She won one of her greatest victories at Svensksund in Finland, and suffered one of her greatest defeats at Sveaborg in Finland. Her government was ruled by one of her strongest kings and one of her weakest kings. She began the forty years at the end of a period of humiliations and poor rule, gained her place in the world as a free nation, and ended the forty years in humiliation, with the exception of the brilliant acquisition of Norway. These forty years were the most decisive in her history. Her people had to face up to a fact that had been proved a hundred years before--Sweden was not and could never be a great world political or military power. She had neither the resources, the favorable location and climate, nor the population to be of political or military importance or strength. Her strategic location in relation to Russia and England was her only strong point in the quest of world power, and this fact, also, kept her in a state of constant danger and fear. To ever have the economic stability for a peaceful existence, she learned that she must pursue a different course. The natural resources she had, mainly iron and timber, were in world demand; her people seemed to have a certain touch in the fields of literature and science, medical science especially; she had possibilities for some industry. These she could develop and expand. With a leader

such as Karl Johan, her future, though dismal at the moment, had bright prospects. It took a great loss of pride and standing to see this, but when the light was revealed, Sweden saw and followed.

The task before Sweden and her Crown Prince was anything but an easy one. Sweden, as most of the nations of Europe, was in a state of poor economics, finances, and, in general, poor spirits. The inflation of wartime ended in disaster and depression. Trade was completely upset, with Sweden importing far more than she was exporting, and prices were high. The people of Sweden were starving. Bernadotte, a wise and able administrator, realized the work out for him and set himself to his task. First of all, he began a vast agricultural rebuilding program to feed his people and to create a surplus for export. An agricultural commission was established to study the problem and to institute new methods and means for increased production.

Second, Bernadotte took in the natural resources of Sweden. Her vast timber lands offered much in lumber and tar for export and home use, and her iron deposits were among the largest in Europe. New conservation, mining and smelting methods were introduced and investigated to provide another source of income for the country. In fact, the Bessemer method was actually developed in Sweden.

Karl Johan's third problem was education. He realized the value of education as a means to build national spirit, and, in keeping with the times, he was primarily interested in creating undying loyalty for their nation in his people. Elementary schools were established in every Swedish village and plans were begun for a medical institution in Sweden. This medical school has become one of the best

in the world, turning out some of the best informed doctors of the past century and a half.

Much progress had already been made towards balancing the power of the government between the Crown and the Riksdag, and between the nobility and the peasants. This was continued by Bernadotte. He saw that the people were ready and willing to keep their place in control of the government--more than ever before--and this he encouraged. The Swedes had been able to reach this point without internal revolution or violent demonstrations. There was no reason to doubt their ability to continue to do so. The only major attempt by Bernadotte at changing the basic way of life led by the Swedish people was to try to enact means of changing the old hold held on the people by the various kinds or degrees of Guilds. He felt the people could be more productive if these restrictions now imposed on employment in various occupations were eliminated, but this system was not to break down during his reign. His son saw Sweden leave behind her medieval labor ideas and start on the road to becoming a modern industrial nation.

Further reforms in the administrative and financial branches of the government brought Sweden back to a point where she could begin, in earnest, to progress on the road to stability. The home problem was finally brought under control by the man who had adopted this land to be his own. The people had seen his remarkable abilities and backed him with everything they had. Without this, Bernadotte's aims would probably have never been realized. Fortunately, he was a leader and had the wisdom, given few men, to know the emotions of the



people, and to know the right moment for each action he proposed. Through his educational policies, he kept the people up-to-date in world progress, especially in scientific advancements, and in a position to hold their own in the cultural developments of the nations of the world.

In foreign affairs, Karl Johan cleverly managed to maintain friendly relations with both Russia and England. He did this by remaining neutral and, yet, allowing each to believe that Sweden favored them. When hostilities appeared imminent in the 1830's, Bernadotte agreed to Russia's demands for a declaration of neutrality, but worded the agreement so as to favor England. With the French revolutionary actions of the 40's, he tended to support openly Russia and England, but continued his neutral position.

The year 1844 saw the end of the reign of the last king of Sweden to be the true "strong man" in the government. Karl Johan died after twenty-eight years as the official leader of the Swedish nation, plus eight years as her unofficial leader. He brought Sweden out of the depths of poverty and put her well on her way to lasting peace and prosperity. Karl Johan, the former French Marshall Bernadotte, had, almost literally, given rebirth to Sweden. Except for him, Sweden might very likely have become a Russian, Danish, or possibly an English or German possession. She remained a free state with a free people dedicated to Sweden. No other ruler in Swedish history has done quite so much for his country--or his adopted country.

The years following Karl Johan's reign saw Sweden come close to ending the peace he had brought her only three times. The first occurred under Karl Johan's son Oskar's rule. War was declared by England and



France on Russia, and efforts were made to force Sweden, who leaned towards the Western Allies, to take part. Pressure from Russia plus other factors kept Sweden out long enough for Russian enemies to force her to make peace.

The second near end of neutrality occurred in 1854, about ten years after the previous danger. This time Denmark and Germany came to blows, and Sweden would likely have entered the conflict on Denmark's side had the king had the backing of his Council. But, the government was now under the control of a powerful prime minister, and the prime minister had made the king keep hands off any Scandinavian problems which were in any way connected with a united Scandinavia, the dream of the time.

The third and final threat to the peace came in the early part of this century when Norway demanded her freedom from Swedish rule. Sweden was not at all willing to give up her prized possession, but the Norwegians made it quite clear that they wanted to rule themselves completely and were ready to fight if necessary. Sweden, fortunately, realized that, even though she could probably put down a rebellion at this time, there would be no peace from Norway until she had eventually gained her freedom. In 1905, the union between the two neighbors was dissolved. To show that she held no hard feelings against the Swedish crown, Norway offered her crown to a Swedish prince who would renounce all his rights to the Swedish throne. This offer was refused, and a Danish prince became king of Norway. Once again the peace was preserved, never to be seriously threatened again, even with two world wars still to come.

During the two world wars, Sweden armed herself and remained in a state of readiness, but was able to remain neutral throughout both conflicts--the only Western nation except Switzerland to accomplish this feat.

The first year of World War I saw the last time a Swedish ruler was to intervene in political affairs. King Gustav declared, in contrast to the governmental attitude, his sympathies with the peasants for immediate decisions on the question of training Sweden's young men for the possibility of war. This action of the king's resulted in political clashes which resulted in a new ministry under the great prime minister, Hjalmar Hammarskjold, who was to lead Sweden through the perilous years of World War I as a strong, but peaceful nation.

With her success at armed neutrality during World War I, Sweden had a pattern to follow and was able to remain neutral in the Second World War. Strength of military and of the people, themselves, made any aggressors think twice before entering into open fighting with Sweden.

Her fame as a leader for peace, outside of her neutrality of almost 150 years, comes, also, from her active participation in the peace organizations of recent years--the League of Nations and the United Nations.

Peace brought prosperity. Beginning with Bernadotte's reign, Sweden began to cultivate, with vigor, her resources. Like most of the other nations of the world, she experienced an industrial revolution, perhaps a little later than most of the rest, and the results of industrialization. Great numbers of people flocked to the urban

areas, but having seen the experiences of other countries, Sweden established many of her factories near the mines and other centers of the natural resources, thus avoiding, to a remarkable degree, the many evils of slums and crowded conditions. As in many other European countries, Sweden, also, experienced a mass evacuation of her younger generation to America, something which might have been avoided had the industrial revolution come to her earlier. The emigration, however, brought Sweden back into world affairs, economically, and opened her doors to the modernization she had thus far not experienced to any great extent. Great changes began to take place in the social structure, which had been, even with her democratic ideals, rather class-conscious.

With the beginnings of the social reforms, Sweden's role as a leader in culture appeared. The declaration of rights of unmarried women to be legally responsible was one of the earliest recognitions in any country of women's rights. Her program of government supported social services is among the best anywhere. The idea of socialized medicine has been adopted with great success in Sweden as have other ideas along the same line. She has had elementary education for all for almost thirty years longer than England and began establishing secondary schools in the mid-1860's. She has made remarkable gains in the problems of drunkenness--in fact, habitual drunkenness is a rare thing among the Swedes. With her educational system and possibilities, Sweden has contributed much to the medical and scientific developments of the past 100 years, being especially prominent in the medical field.

Nowhere in the world can there be found a nation built on such foundations of peace as in Sweden. David Hinshaw, author of The Champion of Peace, very aptly titled his book, for she is that--"the champion of peace." (10)

### Chapter III

#### Section I

Sweden has gained world fame for her long period of neutrality and peace. She has maintained this neutrality partially because she is a nation of physically strong and healthy people. The strength and health of her people is closely related to her physical education program. The major part of the physical education program is gymnastics-- a system developed by Per Henrik Ling, a great Swedish patriot. Gymnastics, according to Baron Nils Posse, are a "means of systematic exercise of the muscles for the restoration of health, and for the development and preservation of the physical powers." (19:1)

As a guide for comparisons and contrasts of various systems of gymnastics with the Swedish system, the history, in part, of the other major systems serves as a guide.

Europe, in the latter part of the 18th century and the early 19th century, was undergoing a great change, socially and politically. The states that had been developing since the end of the Middle Ages were experiencing their most rigid tests of survival. The people of many European states were beginning to "feel their fetters". They were starting to demand a voice in the government and to cry out against the tyrannical rule of their kings. The French Revolution, followed by Napoleonic wars, plus the American Revolution, created great desires for freedom and popular control of the governments. Education and physical education played a major role in this new nationalism, for it was through these media that the various governments established in their citizens nationalistic love. Education slowly became a privilege of all classes, not just the upper classes, and it became



public in nature rather than religious or private.

Just prior to this great movement towards nationalism, a German physical educator introduced a system of gymnastics to Europe that was to be the basis for the great systems of Germany, Sweden, and Denmark that came into existence at the end of the 18th century and the beginning of the 19th century. This man was Johann Fredrich Gutsmuth, who, in 1786, became the director of gymnastics of the Schnepfenthal Educational Institute, founded by Christian Salzmann. This institution was founded on the naturalistic ideals of Rousseau. Gutsmuth, now recognized as the founder of modern physical education and the "grandfather" of German gymnastics, (28:237) remained at Schnepfenthal for fifty years and did much in promoting the scientific aspect of physical education. He felt that knowledge of physiology and medicine was important in order to have a physical education program that would be valuable and progressive. From the Greek ideal, he believed that gymnastic exercises should be used for the harmonious development of all aspects of the body through the physical; that development of the body was of primary importance, for boys and girls, for courage, self-assurance, and to meet the demands of nature. Gutsmuth continued the exercises of his predecessor, Christian Carl Andre, and added others, such as rope climbing, swinging, balancing, and many stunts. Swimming, also, was added and was one of the most valuable of all the exercises. Records were kept on each student's progress, and Gutsmuth classified his exercises and described, in detail, how and when they should be used. This was the first methodical and intelligent use of exercises since the Greek era and laid the foundation for Gutsmuth's successors such as Jahn, Ling, and Nachteggall.

The influence of GutsMuth was immediate. His ideas spread as rapidly as any system has ever traveled. Much of this was due to his two books, Gymnastics for the Young and Games, which were the first references of modern times in physical education and were, therefore, quickly digested by the physical educators of the day.

The new physical education spread with the new educational ideals of Pestalozzi and Froebel. As the era of nationalism was dawning, the systems of education and physical education that were to have so much bearing on our present day programs were developing.

In Germany during the late 1790's and early 1800's, the Napoleonic Wars had created a great desire for the unification of the various German states. Many Germans entered into movements for liberalism and nationalism. Friedrich Ludwig Jahn was one of these men. He was an early leader in the cause of nationalism and liberalism and fought for them until his death in 1852. As a teacher, he spent his spare time with young boys, taking them on long hikes into the country and telling them stories of German heroes and their prowess. On these trips he also organized competition for the boys in running, jumping, wrestling, and games. Gradually, some crude apparatus from natural objects, such as logs, was devised. When winter came, Jahn instructed indoor activities, such as fencing and gymnastics. In June of 1811, Jahn had various pieces of gymnastic apparatus erected on the playground of the school near Berlin where he taught. Young men, as well as boys, participated in these activities and they were an immediate success. No specific program was established at this time, but a regulation costume was adopted to eliminate class distinctions with

a small fee being charged for costume upkeep. Thus Jahn began his first Turnplatz. In the winter the more eager of Jahn's followers remained with him and exercised indoors. The works of GutsMuth were also studied by those who were interested, and Jahn held long discussions with his young pupils on German history, heroes, and his ideals.

The following year, 1812, was even more successful, and Jahn began to classify the exercises, naming them and describing how they were done. He added more apparatus, such as vaulting blocks and crude parallel bars, the first of our present-day heavy apparatus. By popular demand, adults were permitted to participate, increasing the work so much that Jahn was forced to have assistants to take care of the crowds.

In 1813, war broke out against Napoleon. Jahn and many of his Turners, as those who took part in his gymnastics and believed in his ideals were to be called, went to fight for Germany. After the defeat of Napoleon, Jahn returned to his work at the Turnplatz, now financed by the government, and published his book, German Gymnastics. This work became the guide for all enthusiasts of the activities of the Turnplatz and formed the basis of the great Turner movement that was to begin a few years later. The book contained information concerning the exercises, apparatus, and establishment and management of a Turnplatz program. (28:224)

In the years immediately following the defeat of Napoleon, the Turners realized a sudden and rapid growth. Societies organized all over Germany, promoting, through Jahn gymnastics and ideals, patriotism and liberalism. Jahn was exceedingly popular and enjoyed contacts with some of the leading figures in education and government. The

gymnastics, developed by Jahn because of his belief that a strong and healthy people were the hope of freedom from aggression, were in extensive use throughout Germany. However, the popularity of Jahn and his movement was not to last.

As Europe once more returned to normal, after years of upheaval, a reactionary group, headed by Metternich of Austria, came into power. This was a highly conservative group which gravely frowned on the liberal ideas of the Turners. Metternich felt that the playgrounds and their gymnastic programs were merely breeding grounds for revolution. An assassination of an anti-Turner, anti-liberal Russian agent led the king of Prussia to agree with Metternich. He abolished the Turner organizations. Jahn was arrested, and although later released, he never regained his former position as a leader in his movement. (28:225)

Loyal Jahn followers continued to work in secret after the Turners were abolished, and on the several occasions, in the early 1830's and late 1840's, when liberal movements resulted in the lawful re-establishment of the organizations, they were immediately outstanding in their activities. After mid-century, however, the Turners decided to become a strictly non-political organization and no longer to be concerned with political movements. (28:225) From this point, the Turner movement experienced steady growth and eventually united into the National Union of German Gymnastic Societies in 1868.

In the 1850's, Adolf Speiss introduced gymnastics into the schools, and became known as the father of German school gymnastics. The exercises were basically those of Jahn, with some modifications,



and were rapidly adopted in schools all over Germany. When Hugo von Rothstein brought the Ling system to Germany, additional changes were made. German gymnastics were now a real part of German education. Jahn, himself, had never attempted to introduce his system into the formalities of the school system. He preferred to improve the intellect of the young German in a less formal manner, so it was not until after his death and the Turner movement had come into existence as a non-political force that school gymnastics were promoted.

To compare Jahn's gymnastics with those of Denmark, and of Sweden, some information as to the exact nature of the German gymnastics is necessary. Jahn began his program by taking boys on hikes into the countryside. On these hikes he improvised exercises and games. It was this natural setting that Jahn felt was so important to sound growth. However, as the Turner movement grew and indoor gymnasiums were used more and more, the more natural movements of running, jumping, and climbing were replaced with activities on heavy apparatus such as parallel and horizontal bars. These were used to develop, basically, the same large muscle groups as the more natural activities, but lacked the freedom of movement and play of the outdoor gymnastics. The games were almost entirely deleted, although Jahn realized their value. He felt, however, that only those games with real value for strengthening the body were important. The outlawing of the Turners increased the amount of indoor gymnastics, and, consequently, the amount of apparatus used. Systematic use of the apparatus, progressions, and stunts were perfected. In his book, Jahn had a great deal of information on various exercises which he



listed under topics. These topics give some idea of his system and the details he considered as necessary to accomplish the goals he had in mind. As listed by Van Dalen, (28:241) as he took them from Jahn's book, they were: (1) preparatory exercises, (2) walking, (3) running, (4) leaping, (5) vaulting, (6) balancing, (7) exercises on a single bar, (8) exercises on parallel bars, (9) climbing, (10) throwing, (11) drawing, (12) pushing, (13) lifting, (14) carrying, (15) exercises with dumbbells, (16) wrestling, (17) skipping with hoop, and (18) skipping with rope. As can be readily seen, at least thirteen of the eighteen listed require apparatus of some kind, and over half of that apparatus is considered heavy apparatus. This is important in later considerations of the Jahn and Ling systems. When Speiss introduced his school gymnastics, he made certain modifications of the exercises and equipment to meet the needs and abilities of the children, both boys and girls.

Another important feature of Jahn's system was his use of squads and squad leaders. Rather than have mass execution of the various exercises, those participating worked in groups, or squads, and in isolated cases, individually, doing whatever exercises they desired or felt necessary. Instead of all doing the same thing at once, there might be a variety of different exercises being done at various locations around the Turnplatz, or gymnasium. The only supervision would be that of squad leaders. This idea of "free exercise" contrasted notably with both Ling's and Speiss' ideas on the subject. Speiss' idea of "free exercise" was that done without any apparatus or with such objects as could be held in the hand. (28:238) He

exercised his group en masse, all doing the same exercises at the same moment. Ling's ideas were much the same as Speiss' in this respect.

So as not to make Jahn's system appear too lax in supervision, it should be noted that he did stress that precautions be taken in the execution of the exercises. He insisted that his squad leaders be proficient and that they demonstrate the skills correctly. With children, Jahn recommended division into squads by age, size and ability, and he urged that beginners learn their exercises well and in progression, so as to accomplish the aims of the exercises, and to prevent injury. In this manner, he did believe in firm supervision and discipline, especially where children were involved. Basically, Jahn wished to encourage initiative among his pupils. In order to do this, he rejected the idea of mass gymnastics, in the belief that this was militaristic and, therefore, discouraged any free thinking from the students, who were there of their own free-will. Here Speiss disagreed, for he felt that the best manner to teach good development was through ordered progressions. Exercises were carefully classified and taught in a precise manner with no exceptions in Speiss' system. The exercises were basically the same, but the methods were quite different.

Briefly, the Jahn system of German gymnastics was a system employing the use of heavy apparatus and was a relatively free program of exercising. In the same country was another system, based on the same exercises, but varying in method--the German school gymnastics of Speiss.

In the neighboring country of Denmark, the early exercises of Gutsmuth were the foundation for a system of gymnastics, as they had

been in Germany. Perhaps even more than in Germany, the Gutsmuth system was followed in Denmark. The Danes were, in fact, one of the first peoples to adopt the new idea of physical education as an important aspect of education and national strength. The early leader of this movement in Denmark was Franz Nachteggall, director of gymnastics in the country, and the first, in 1799, to open a gymnasium in Europe.

Nachteggall followed Gutsmuth's method of exercising very closely, making very few changes. The only major differences were in Nachteggall's lack of a systematic approach, although he did have the exercises divided into seven basic groups. He disregarded games and hiking which were the natural aspect of Gutsmuth's system. Nachteggall used teachers, or guides, much as Jahn did, but he let them use their own judgment far more than Jahn. Later years saw the introduction of some of Jahn's Turner ideas into the Danish system, resulting in the use of more heavy equipment than previously, and, eventually, regimentation of the gymnastics became so characteristic that interest in physical education diminished.

Outside of developing a system of gymnastics in Denmark, Nachteggall was, also, the first director of a school established in 1804 for the training of the military teachers in gymnastics. This is of great importance for it was the first training institution for physical education ever established, and although it was controlled by military factions, its supplementary school for the training of physical education school teachers, also, directed by Nachteggall after 1821, gave great impetus to the profession. Nachteggall worked hard to promote both institutions, especially the Civil Gymnastics Institute.

The loss of interest in gymnastics led to Nachteggall's resignation in 1842, but, although it was yet to be realized, much had been done already. During one of the first years of Nachteggall's private gymnasium, Per Henrik Ling visited it, and it was primarily from here that Ling received his first ideas for the great system he was to begin to develop shortly after his Danish visit. It is interesting to note that the "child" of the Danish gymnastics later returned to give rebirth to the parent. Later years saw the Ling system arouse renewed interest in Swedish gymnastics and renewed interest in the teacher training program.

Physical education in the rest of Europe consisted primarily of variations of the German system and later, the Swedish system. France never developed any system of her own, although it was through the efforts of Baron Pierre de Coubertin, one of her greatest physical educators, that the Olympic Games were renewed in 1894. Some dance methods did originate in France.

Russia had little education of any kind outside that of the upper class, and, consequently, no physical education until after the fall of the Tzar in the twentieth century.

In England, conditions were such that little need was felt for gymnastics, but England was very sports-minded and games of a number of varieties prevailed in the country. Some gymnastics of a military variety were introduced by Phokian Clias, who also introduced them in France. The advocates of the Swedish Ling system who came to England also introduced military gymnastics. However, the man who really established English military gymnastics on a firm foundation, Archibald



Maclaren, found fault with both the Swedish and German systems and put his own ideas into practice. He felt that the Swedish system was "too much limited by the medical and corrective aims, and he objected to the German system because of its music and rhythms and its efforts to attain precision in group activities." (21:127-128) Even so, few of Maclaren's ideas were really original; they were merely revisions to suit his fancy. The Swedish system eventually became the most popular system of gymnastics, especially with the women, in England.

As can be seen, the two systems of physical education to have the most influence in Europe were those of Germany and Sweden. The German gymnastics were the earlier of the two and spread throughout the Continent, fairly intact, but with some modifications in various countries. The Swedish system was to make its impact on physical education at a little later date, but its influence was just as emphatic. The beginning of it all was with the German, GutsMuth, who was really the first to put exercises into any kind of system or progression and the first to record, in books, his ideas. GutsMuth might be considered the hub, and the various systems, or variations of systems, which grew from his beginnings are the spokes of a wheel. Two major systems branched directly from the hub--the Danish and German. The third major system, the Swedish, branched out rather indirectly, but its attachment still goes back to the hub.

## Section II

Per Henrik Ling was the father of Swedish gymnastics. He was born in Smaland in southern Sweden in 1776. His grandfather had risen from the peasant classes, changed his name to Ling, and became a



minister. Both Henrik's father and stepfather were ministers. Ling lost both his mother and father while he was still fairly young, leaving him with few happy memories of his childhood. In school he early demonstrated an independent and original nature, a result, perhaps, of his early orphaning. Upon finishing his elementary schooling, he was admitted to the University at Lund in 1793 and completed two semesters there before taking employment as a clerk in Stockholm. While in Stockholm, he gave private lessons in French and German and was supposedly enrolled at Upsala, although there is no record of his ever actually attending that institution.

The period from 1794 until 1799, when Ling left for Copenhagen and the Continent, is a blank, for he corresponded very little with his family in this period, and spoke little of it in his later life. Some say he spent those five questionable years traveling, engaging in romantic adventures, and in the military services of foreign countries. However, these stories have little to support them. Leonard (13:150) feels, that even though it is known that Ling was proficient in several foreign languages, he never left the Stockholm area before 1799, and his use of foreign languages could have been gained by conversing with the many foreigners in and around Stockholm.

In 1799, Ling went to Denmark. Here he studied at the University in Copenhagen, at first pursuing the study of linguistics, but later turning his attention to literature, after becoming friends with several well-known German and Danish writers. At the time a great revival of the old Norse sagas was in progress. These men introduced Ling to these stories and their heroes. Ling wrote several poems about

the old Norsemen in French, Danish, and German, and translated a poem of Johannes Evald into Swedish. He also wrote a play while in Denmark and began conceiving ideas for later works on great events of Swedish history, through which he hoped to renew the interest of Swedish youth in the vigor of the ancient Norsemen.

During his stay in Copenhagen, Ling also became a student of the art of fencing, a skill in which he had considerable ability. It is partly from this activity that he is supposed to have become interested in gymnastics. The story most commonly found is, that after suffering an injury to his arm, he discovered, from fencing, the value of the exercise in aiding in the recovery of his injured arm. He visited Nachteggall's gymnasium, and it is known that Gutsmuth's Gymnastics for the Young was printed in Danish by this time, as were several other volumes on exercise, so it is apparent that Ling must have been influenced through these media.

Upon his return to Sweden, Ling became fencing master of the University of Lund. He soon set up some apparatus for exercising in a general manner. Around 1806, he began the study of anatomy and physiology, two subjects with which he was to become quite familiar and of which he was to make much use. He, also, introduced bayonet fencing to Sweden at this time. With his fencing and new gymnastics, Ling became popular and in much demand in several cities of Sweden. He traveled extensively in the years 1807-1811, heading clinics and giving demonstrations. In 1809 he was married to his first wife, and a year later became the father of a little girl, who would later marry one of the teachers in her father's school. In his last year at Lund, Henrik published

his most successful play, "Agne", although this was not presented on the stage during his lifetime.

The eight years at Lund appear to have been the formative years for Ling in regard to his gymnastics system. During his time here, he was making plans for future years, learning as much as he could about the human body, and, in general, building a foundation for the intelligent application of gymnastic exercises to body needs.

These same years were trying ones for Sweden. It was during this time that she became involved in the Napoleonic Wars, and in so doing, found herself in a very precarious situation. By entering the war in alliance with England, Russia, and Prussia, she soon lost her holdings on the Continent--Swedish Pomerania, Stralsund, and Rugen. Then favoritism to England brought Russia down on her, and Finland was lost. There was trouble with Denmark and some with Prussia. Sweden's finances were in poor condition. She dethroned one king, and then had to make a humiliating peace in order to obtain a successor. The people had degenerated physically and morally. Poverty was common, drunkenness was on the increase, and evil was everywhere.

To Ling, this was most apparent. As a great patriot, he wanted to rebuild his nation's strength and return her to a place of respect in the world. Both his writings, mostly poems, and his gymnastics reflect this desire. He wrote one of his better known poems, "Gylfe", on the loss of Finland, revealing his intense desire to help Sweden, and his great hatred of the Russians.

Nachtegall had opened his teacher training institutions in Denmark in 1804 and 1808. Ling recognized their great possibilities,

and began to formulate plans for a similar school in Sweden. In 1813, he went to Stockholm and applied for the position of fencing master in the Royal Military Academy at Karlberg. He then presented to the Committee on Education a plan for his proposed school. Already well known in the field of literature, and with successes in gymnastics behind him, the plan was quickly approved, and Ling was appointed director of the institution, a position he was to hold until his death in 1839. About 1814, the Royal Central Institute of Gymnastics was opened on the same site on which it remained 100 years.

The Royal Central Institute enjoyed success from the start. One of the first to realize its value, and to recognize the value of Ling's exercises, was the new Swedish Crown Prince, Karl Johan (Bernadotte). He ordered officers from the Swedish army to attend the Royal Central Institute to take the course offered by Ling, and to then return to their posts and teach their men. This early interest of the military in the gymnastic exercises of Ling accounts, in many ways, for the prominence of military form which was to later have certain disadvantages in the promotion of the Swedish system in other countries. Within a year Ling was given more money for his school and an assistant was added. In 1818, four years after the opening of the Institute, Lars Gabriel Branting, who later became director of the Institute after Ling's death, came to assist. In 1829, one of the most avid promoters of Ling gymnastics, August Gerogii, came to the Institute as a teacher. It was Georgii who was to carry the system to England and France in later years. Georgii and Branting were the two men Ling considered most capable in carrying out his work, and it was with them that he worked most closely in developing his system.



In the years following Branting, the Institute was controlled by army officers. Even before this time, its student body had been primarily military, but it was not until 1946 that a non-military man again headed the Royal Central Institute.

The organization of the Institute was revised in the 1860's; the length of the course was extended; and the Institute was divided into three sections--the military, the medical, and the pedagogical. Ling's son, Hjalmar, was the first head of the educational (pedagogical) division, and it was he who really established the educational gymnastics and gave them some systematic order. His "day's order" was a well-known part of Swedish educational gymnastics. Ling himself had worked primarily with the military and medical gymnastics, and had been rather sketchy in outlining gymnastic exercises for use in school education, due, in part, to the fact that the importance of physical education as a part of the regular school curriculum was not yet recognized for its true value.

The medical section was headed by a physician. The value of medical gymnastics had been clearly demonstrated, first by Ling, but more so by his successor, Branting, who concentrated on the medical gymnastics after the need for military gymnastics diminished. The doctors who had opposed medical gymnastics at first were in complete favor of them by mid-nineteenth century, and to have a doctor head the division at the Institute gave medical gymnastics even more prestige among those of the medical profession.

The military division was headed by army officers, the first being Colonel Gustav Nyblaeus, the successor to Branting and, also, the head of the entire school from 1862 until 1887.



Although changes have been made and modifications formulated, the original ideas of Ling remain fairly intact. His work, "General Principles of Gymnastics", published shortly after his death, remains as the foundation for the Swedish system of gymnastics. Ling worked hard to establish his gymnastics on a scientific basis. The changes that have been made are based primarily on this fact, for where scientific advances have been made, new knowledge has been gained, and changes were necessary to improve the system. A paragraph from Theodora Johnson's book, The Swedish System of Physical Education, (11:13-14) reveals, Ling's theory of physical education and the importance of a scientific basis. She says:

"Ling realized that the full advantage of Exercise, as a therapeutic agent, could never be obtained until a system of Physical Education should be devised which was firmly based upon scientific knowledge. He revived the philosophy of the Ancients, and once more advanced the theory that by means of exercise it should be possible to develop health and strength and beauty in youth, conserve them through manhood and prolong them during old age. He held further that it should be possible by exercise to correct many imperfections and deviations from the normal and to cause certain functional derangements to yield to this most natural method of cure, provided each exercise had a definite physiological aim, and produced a definite physiological result. He then conceived the idea that an extensive, graduated series of movements could be devised suitable for every stage, from weakness up to the greatest strength; adaptable alike to the requirements of little children, to girls as well as to boys, to women as well as to the strongest men, and again suitable to the use of those in advanced years who might wish still to derive the benefits conferred by exercise. The fulfilment of this idea became the object of his life."

Again, in Dr. Taylor's book, The Movement Cure, (27:53-54) a quotation from Ling himself reveals his intense belief in the scientific use of the laws of physiology and mechanics to better understand the body and its unity, especially in education and remedial treatment. Ling said:

"It is perhaps not readily understood that a movement, or a mechanical action, is competent to affect interior portions of the organism. It is necessary first to understand the human system is a unit, complete and indivisible. It cannot exist in distinct parts, for then it would not be one organism, but several. All that we find in the body, whether inherent, or foreign matter, in any movement, to whatever extent, engages in each displacement of any one part, and this implies a corresponding change in neighboring parts, according to the extent of the primary action.

"Every little act of changing the attitude, or the relation of the members of the body, an exterior pressure upon a nerve, a vein, or muscle, must necessarily produce a displacement of neighboring parts, and produce an action more or less sensible upon organs, in the proportion of their distance and intensity, resembling those wave-circles we notice on the surface of water.

"Experience shows that the different professions affect differently the physical and moral stamina of those engaged in them. It shows us that a very slight pressure upon a nerve irritates it, that a greater pressure produces pain, and if we add still to the pressure, engorgement, and at last paralysis is produced. It is well known that a certain position is more convenient than all others for the ease of the body and the tranquility of sleep. Do not persons affected with internal maladies find that they are more comfortable in some positions than in others, and therefore seek those positions?"

Ling, in beginning his program, used many of the exercises of the Danish Gutsmuth-Nachtegall system, but soon began discarding those of which he did not approve as being based on scientific theories. Although fencing and horse-vaulting were continued, many of the other exercises requiring heavy equipment were rejected, and a system of "free exercises" and light apparatus work prevailed. The idea of free exercise was very pleasing to Ling. Van Dalen (28:254) has quoted Edward M. Hartwell in summarizing Ling's reasons for considering free exercises as important. Ling claimed, "1) That more can exercise at one time under a teacher. (2) That such movements can be made in

a great variety of places, e.g., on the march, in barracks, quarters, a schoolroom, or in a schoolyard. (3) That the trouble and expense of providing and keeping apparatus in repair are eliminated. (4) That the fact that the entire squad or class must make the exercises at the same time promotes strength and agility and rapid attainment of bodily control. (5) That the execution of gymnastics at the word of command reinforces the effect of strictly military drill. (6) That free movements are more easily adaptable to the bodily peculiarities of individuals. (7) That they are better than machine gymnastics for overcoming awkwardness and stiffness." To Ling, the Jahn system of German gymnastics required too much of the human body and was too complicated on the apparatus. Ling used equipment, but only that which permitted simple movements, such as stall bars, booms, low combination benches, vaulting boxes (or horses), and climbing ropes. Van Dalen (28:255) quotes from Hartwell in the Commissioner of Education's report. Hartwell says that Ling subordinated "exercises on apparatus to the needs and nature of the body, while Jahn subordinated the body to the nature of the gymnastic machines."

These were Ling's theories. His system characteristically gave much attention to the selection and arrangement of the exercises so as to meet scientifically the needs of the individual and the body. Precision and correctness in the performance of the exercises was stressed, and each lesson utilized almost all the equipment and types of exercises. In this manner, Ling, and his son, too, believed that the body would be more harmoniously developed with all parts receiving equal attention. Jahn took just the opposite view on this. In his system all exercises

in one day's lesson were done on only one or two pieces of equipment, thereby developing each part of the body at a time, not all parts at once as did the Swedish system. Also, in contrast with the German system, the Swedish system employed mass drills rather than the squad arrangement. Ling felt that more could be accomplished by executing the exercises to command rather than from memory. He believed that the German system allowed the students to become little more than robots in the performance of their gymnastics. The students memorized the exercises and went through them mechanically. In the Swedish system, Ling felt that alertness was necessary, so by executing the exercises to command, the student was never sure just what was coming next, and must remain attentive to keep up with the progress of the gymnastics. This very idea of Ling's led to much criticism, for many felt just the opposite about his views on commands and alertness. They believed the commands allowed no initiative on the part of the student, and, therefore, the exercises were merely dull drills of a strongly military nature. Unfortunately, the successors of Ling and his son were unable to adjust to changing times or to utilize enough new scientific knowledge in the gymnastic exercises, and the statements of the critics came true. The Twentieth century has been one of great revision of the Ling system to meet the changing needs and ideas. The old Ling system employed much continued tension followed by short rest periods. The new revisions have put in movement which combines tension and relaxation in equal amounts in the pattern. Attempts have been made to relieve the performance of the exercises of their military drill characteristics, and to make them more pleasurable and practical for every day



needs. Even with modern revisions, however, the Swedish system of gymnastics as established by Per Henrik Ling, his son, Hjalmar, and Ling's followers is primarily the same as it was 150 years ago when first introduced to the Swedish nation. And gymnastics are still the prevailing form of physical education in Sweden. Games and sports have been introduced into the program, but gymnastics are the far greater majority of the activities in the program and remain, with modernization, as they were originally created and taught.

The Swedes took to Ling's system quickly. They wanted it, psychologically, and needed it, physically and psychologically. To them this was a means to regain lost pride; this was a means to once more be strong. Ling's system might not have developed so rapidly nor spread so quickly had the situation not been quite so perfect. The government and the Crown were looking for a means to restore Sweden; Bernadotte was quick to see the value of Ling's ideas and to patronize his services; and to the Swedish people, Bernadotte was a "gift from heaven". The Ling gymnastics might not have become popular quite so fast had it not been for this powerful support, but they would, most probably, have still enjoyed fairly early success, for the early demonstrations, before the Royal Central Institute, had already proved popular and were spreading Ling's fame to all corners of the country.

In order the better to understand Ling's system and his theories, it is necessary to look into the divisions he instituted into his system. Actually, the formal division of the Swedish gymnastics did not come until after Ling's death, but he had some rather distinct methods or purposes in various exercises which served to separate one from the



other, and he did classify the exercises into groups. The groups were four in number and were listed as: (1) military, (2) medical, (3) educational or pedagogical, and (4) aesthetic. These each had a set purpose, but generally overlapped each other in aims. A brief definition of each will be given, then a closer study made of the two most prominent divisions, the educational and the medical.

1. Educational gymnastics make use of apparatus and free exercise for schools and classes. They are designed to develop harmoniously the entire physique, and to quicken and cultivate the mental facilities.

2. Medical gymnastics are used only for curative or preventive purposes, and are extensively supplemented by massage.

3. Military gymnastics are for the training of soldiers.

4. Aesthetic gymnastics are to express by pose and gesture every kind of emotion, and are chiefly studied by dramatic artists.

(11:16-17)

The military gymnastics were those strictly for military purposes, and included calisthenic exercises, and fencing and bayonet-fencing drills--all related to soldiering. The aesthetic gymnastics were done to music or command and really had little development until some time after Ling's death. They have many of the characteristics of modern dance.

Educational gymnastics were developed more by Ling's son, Hjalmar, than by Ling himself. Ling laid the foundation for them by creating "tables of movement" (28:255), which were simple arrangements for the exercises. The famous "day's orders" connected with Swedish educational gymnastics were drawn up and put into use by Hjalmar Ling after his

father's death. These were a plan in which the exercises were systematically arranged so as to include the whole body in one lesson. These plans were arranged in groups to meet various needs, and also took into account age, size and ability. In this manner, a lesson or series of lessons could be chosen to be used in reaching certain goals, and they would be in the correct order of progression so that trained teachers could use them with ease. Hjalmar Ling also invented apparatus that was adaptable to use by children, and for use in the schoolroom. Much of this apparatus was easily substituted for by classroom furniture, a very advantageous feature of the Swedish educational gymnastics not found in other educational gymnastics systems. Many of the exercises required no apparatus at all, making them available to even the poorest schools where it was impossible to obtain equipment.

As stated by Hartvig Nissen (15:30), there are three purposes of educational gymnastics. These are:

"First. By movements suitable to the human organism, and, step by step, leading out from each other to develop the body and to produce strength, and health.

"Second. By increasing the strength of the body and by endurance and skill to develop freshness of mind, powerful will, resoluteness, and courage.

"Third. To assist the school in its educational work, by making the pupil accustomed to strict attention, quick and exact execution of given orders; to master his own will, to subordinate himself as a part of a great totality."

It can be reasoned from these three purposes that the over-all objective of Swedish educational gymnastics, is the healthy development of the body through well-ordered exercises. In obtaining this development by well-ordered progression, Hjalmar Ling divided the exercises into anywhere from eleven to fourteen groups, and in no case were these

arrangements to be reversed, any one of the order eliminated altogether, or any other change made in the order. The general order for one lesson was:

1. Order or introductory exercises
2. Leg exercises
3. Arch-flexions
4. Arm exercises
5. Balance exercises
6. Back exercises
7. Front or abdominal exercises
8. Lateral or side exercises
9. Jumping and/or vaulting
10. Slow leg exercises
11. Respiratory exercises.

Various sources differ in the terminology used to describe the general groups of exercises, and some reverse the order of the jumping and slow leg exercises, but all have basically the same order of progression. In addition to these basic eleven groups, three more groups were included for advanced students. These were: fall-out movements, to follow the balance exercises; running and marching, to follow back exercises; and, one leg and one arm movements after the lateral exercises. (The fall-out movement is executed by simply placing one foot either to the front or obliquely to the side, the feet at 90 degrees to each other and about three feet apart. The forward knee is bent to a right angle and the body thrown over the front knee, making a straight line with the back and the back leg. The head and chin are kept up and the chest squared to the front with no twisting of the body, even when the foot is to the side.)

In setting up the exercises in the order that he used, Hjalmar Ling had definite reasons in mind. He felt that before the gymnastics period, the students had been sitting at desks, concentrating their powers on mental work, and consequently, were bent over their desks either writing or reading. Their chests were contracted, and pressure was on the abdominal organs, causing a certain slowing down of circulation, especially venous, due to the pressure. Respiration was slowed, the muscles relaxed, and the mind tired. All this led to a very bad habit--stooping. In order to counteract this, the exercises were set up to increase circulation, relieve pressure, and to require the pupil to straighten his body.

The first four groups were mainly for renewing circulation and for turning the attention of the pupil to muscular rather than mental efforts. The order or introductory exercises readied the students by requiring that they assume correct positions and turn their attentions to the exercises. Such commands as: "Attention! In Place--rest! Attention!" (15:44) were given in this first group. The leg movements then helped increase circulation to the lower parts of the body and relieved the compressed abdominal organs. "Feet--close! Feet-open! Close! Open!" (15:44) might be the commands for these movements at the beginner level. The arch movements were designed to expand and raise the chest, and to straighten the upper part of the back and neck. The arm movements were to elevate and broaden the chest and straighten the spine. (15:40-41)

Now that the circulation was increased and attention gained, the remaining exercises could be executed. Balance exercises followed arm movements because the arm exercises would increase the heart rate,

and since balance movements are slow, this would tend to counteract the effect of arm movements and slow the heart rate. Balance also causes more complete muscular contraction and equilibrium of all parts of the body, resulting in better posture. The nervous system is stimulated, too. (15:41)

The back exercises explain themselves. They were for strengthening the back and to bring the shoulders and shoulder-blades into correct position, resulting in a straight back.

The front or abdominal exercises were to raise and stimulate the abdominal organs and to increase abdominal muscle strength.

The side or lateral exercises were to strengthen waist muscles, and stimulate internal organs and spinal nerves.

The jumping or vaulting exercises were designed for their effect on the entire body. They increased circulation and respiration, strengthened muscles, and stimulated the nervous system.

The slow leg movements then repeated what the balance movements had done. They slowed the circulation (the heart rate) and respiration, and allowed the muscles to prepare for relaxation.

The final exercises were those for respiration, which continued to slow the heart rate and respiration and allowed the muscles to relax gradually.

The usual method used in the educational gymnastics was to do the same lesson, or day's order, daily for a period of three weeks, then do the second lesson for three weeks, then alternate, daily, the first and second day's orders for three weeks, add the third day's orders for three weeks, and so on through the number of lessons it took to complete a school year.



These orders as set down by H. Ling have been faithfully followed by the advocates of the Swedish gymnastics. Some teachers, like Nissen, slightly modified them by reducing the number of groups in a day's order to suit the individuals involved, but the progression was not changed. Nissen (15:44) said that he did not feel that all eleven groups were necessary for young children, so he recommended anywhere from five to seven groups, cutting out such groups as the arch exercises, jumping, and slow leg movements--activities children automatically did in their play.

Per Henrik Ling was interested from the beginning in the therapeutic value of gymnastics for the correction of postural and other body defects. In his first year as director of the Royal Central Institute, he began experimenting with medical gymnastics. He had studied anatomy and physiology, and was convinced that the scientific application of exercise and massage would be of great value as an aid to the medical profession. The medical profession, itself, was slow to see this and there was much controversy before the physicians accepted medical gymnastics as a weapon in the fight against physical disability. Not only did Ling devise specific exercises for use in medical gymnastics, he also advocated that only specially trained personnel be allowed to teach and make use of exercises for corrective purposes. Until this time trainers and masseurs, not necessarily trained by anyone except themselves, had been giving exercises and massage, and, as often as not, the physicians would allow almost anyone to apply these corrective methods. Ling, as had some before him, realized that exercises and massage incorrectly done

could be more dangerous than none at all. Ling, therefore, required that teachers learn the correct means of application of exercises and of massage, and he also required of his students at the Institute some knowledge of anatomy and physiology.

Massage was known long before Ling incorporated it into his medical gymnastics. Its history dates back to ancient times, and its use as a health curative and restorative means had long been known to the whole world. However, as the medical profession had become more scientific, massage had come to be considered non-medical and unscientific. It was not until the middle of the nineteenth century, after Ling had proved its worth in connection with medical gymnastics, that massage was again accepted as a vital part of the medical field. However, it is seldom used today as treatment in itself, but is a part of medical and physical methods of treatment. Massage, like exercise, is prescribed by physicians and trained physical educators, for correcting or strengthening the body, or parts of the body. Massage and exercise are applied according to the laws of physiology, kinesiology and other medical requirements today. This is what Ling was striving for--a scientific application of these activities. Today the medical gymnast must know and understand the scientific and medical use of exercise and massage, and a masseur must know and understand massage and exercise.

Ling's work was primarily with medical gymnastic exercises, but he did incorporate the use of massage into a part of medical gymnastics.

In beginning his system, Ling first distinguished between "active" and "passive" movements. Active movements are those which the subject

does entirely by himself by use of voluntary muscle contraction. They may be free movements without any support; or, they may be restricted or supported movements, using either gymnastic apparatus, equipment such as chairs, tables, etc., or human support. The effect of these movements is, in general, to increase metabolism by increasing blood pressure and circulation. Active movements include various activities which are classified into such groups as restorative, developing, strengthening, derivative, and others. (8:15-17)

Passive movements are those which are done for the subject. The subject takes no part in the movement other than allowing someone else to move his body or part of his body. These may be movements such as flexion, extension or rotation, or they may include manipulation of the parts by stroking, kneading, pressing, or percussing. It is in these passive movements that Ling made use of massage--stroking (effleurage), kneading (petrissage), percussing (tapotement), pressing (friction), and vibration are all classifications of massage. (17:5) Passive movements are considered best for stimulating absorption from the body tissues, and are, therefore, known also as resorbing movements. Passive exercise activities are grouped under such headings as reflexive, enlivening, strengthening, derivative, soothing, and resorbent. (8:17)

Ling had a third classification for his medical gymnastic exercises. This was the resistive, or duplex movements, a combination of active and passive movements. Active-passive movements, or "concentric duplex movements," are those exercises in which the subject does the moving as the operator, or gymnast, resists. In passive-active, or "eccentric duplex", movements the operator does the moving as the subject resists.

In naming this classification, the word duplex was used to indicate two people being involved, and concentric indicates the overcoming of a resistance, by the patient, which prevents flexion or movement towards the trunk, while eccentric indicates the overcoming of a resistance preventing extension of the body part, or movement away from the trunk. (17:5-6) Concentric contraction is contraction in which the muscle actually shortens; eccentric contraction is a tensing, or contraction, of the muscle, but no actual shortening occurs.

There is, also, a fourth classification not so commonly known or used in medical gymnastics as such. These are assistive movements and are used to help train the motor nerve to obey the will of the subject in doing a movement or an exercise when there has been some damage, as paralysis or locomotor ataxia, to the nervous system. (16:35) These movements are used primarily in the field of physical therapy, which is directly related in many aspects to medical gymnastics, but is usually under more direct supervision of medical doctors than are medical gymnastics.

These classifications of movement divide the movements so as to clarify better the purposes of various exercises. However, in separating the movements into their categories, it is essential not to overlook the overall purposes of "movement treatment" as developed by Ling. Ling designed his medical gymnastics to be used in restoring strength and health, in correcting postural deviations, and in cooperation with those trained in medical science. The Swedish medical gymnastics did not, nor do they now, claim to be a cure for physical illness or injury. It may be true that medical gymnastics are the quickest means



of curing a defect, but the main purpose of them is as an aid in restoring health and strength along with any necessary medicines or operations. They may sometimes be used at the same time as other treatments, or they may be used after the medical treatment is completed. Medical gymnastics may also be used just for their value as exercises. These are the basic purposes of Swedish medical gymnastics, and its influences on the human body are tremendous when properly used. Nissen (17:16-17) states six influences of Swedish medical gymnastics on the human organism:

"First, by increasing the circulation, respiration, and temperature, improving the digestion, absorption, and nutrition, and facilitating excretion.

"Second, the muscles become developed, the bones and the whole human frame better proportioned.

"Third, the appetite is increased, and food is taken with greater relish.

"Fourth, sleep is facilitated.

"Fifth, the brain acts more vigorously and is freed from physical depression.

"Sixth, relieves pain and removes congestion."

Ling indicated five fundamental positions and these he subdivided into starting positions for various parts of the body. Combined in various ways, these positions allow for nearly twelve thousand different positions in which to execute the exercises. The five fundamental positions are: standing, kneeling, sitting, lying, and hanging. The starting positions, which are basically three with various parts under them, are: (1) standing, with three divisions--hands on hips, arms horizontal, and arms vertical; (2) sitting, with two divisions--astride sitting, forward bend sitting; and, (3) lying, with four divisions--reclining, knees bent, on back lying, on front lying. (17:19-20) From these



fundamental positions and starting positions, almost any exercise imaginable can be used to suit the individual involved.

For further understanding of the value and ease of use of Ling's medical gymnastics, a knowledge of the apparatus used is necessary. This apparatus, naturally, differed somewhat from that used in ordinary gymnastics. Passive gymnastics, more than active, required some simple apparatus such as cots, stools, hanging ropes and bars, ladders, turning poles, and other similar pieces of equipment. The active movements needed little or no apparatus. For support, a chair or bedpost was quite adequate. A well-trained attendant was the most necessary "equipment" for either kind of movement.

To illustrate Ling's medical gymnastic exercises, utilizing the various positions and the various forms (active, passive, resistive), some of his own exercises as recorded in Nissen's Swedish Movement and Massage are best. (17:23, 31, 39, 39-40, 50-51, 53-54, 55)

1. Muscle rolling--arm--passive--sitting or lying. The limb is grasped with the palms of both hands, and a quick, alternate pushing-and-pulling motion is made, gradually sliding downward from the shoulder. The muscles of the arm are rolled against each other, increasing blood circulation. This should be repeated three to five times.

2. Vertical arm flexion and extension--sitting--resistive--active--passive. The operator is behind and a little higher than the subject. He takes hold of both hands of the patient, and resists as the patient bends and stretches his arms slowly, keeping the elbows out to the side. The operator's knee is pressed against the patient's back with a small pillow between. This is repeated from five to fourteen times.

3. Thigh rotation--leg--reclining--passive. The operator takes hold of the subject's foot with one hand and his bent knee with the other. He presses the knee upward, then moves it outward and downward, describing a circle in the hip joint. The knee should not be moved past the mid-line of the body. This is repeated from five to ten times each way. A good exercise for equalizing the circulation and as a derivative from diseases of the abdomen and pelvis, as well as for limbering the hip-joint, is the thigh rotation exercise.

4. Leg flexion and extension--resistive--lying or reclining--active-passive. The operator stands at the side of the patient, takes hold of the heel with one hand and the ball of the foot with the other. The leg is bent with no resistance and then the patient straightens it while the operator resists by pressing the leg upward and slightly giving way until the leg is perfectly straight. This is repeated five to ten times.

5. Back kneading, vibration, and friction--front lying--passive. These are applied from the base of the skull down and from the spinal column outward to the sides, all over the back. A good movement in connection with these is to put the heel of the hands on the spinal column at the neck and rapidly do a shaking movement, allowing the hand to slide slowly down toward the end of the spine. The whole manipulation should always be followed by long, slow frictions on both sides of the spinal column. These actions increase circulation, stimulate nerve action, and serve to quiet and soothe the patient.

6. Trunk torsion--kneeling--resistive. In this exercise the subject kneels on a bed or table of similar height, with his hands on his hips. The operator stands behind him, fixes the subject's back

with one knee, takes hold of the subject's shoulders, his right hand in front of the subject's right shoulder, his left hand behind the patient's left shoulder. He then resists the patient as he turns or twists his trunk to the left. The hands are then reversed and the subject is resisted as he turns to the right. This is repeated four to eight times, and has a good effect on the spine, the nerves, and circulation.

7. Trunk elevation--lying--active. The patient lies on a bed with the lower legs hanging down over the edge. The operator holds the knees by pressing down on them while the patient raises his body to a sitting position. This is done two to six times and strengthens abdominal muscles.

Ling also prescribed various exercises for what he termed constitutional diseases, local diseases, diseases of organs of circulation, digestion, respiration, urinary and sexual organs, and of organs of movement.

The references for the exercises are again from Nissen. (17:65-66, 76) For chlorosis and anemia, constitutional diseases, he prescribed, for a period until strength begins to return, this group of exercises.

1. Shoulder rotation and chest lifting in a sitting position. This is to stimulate respiratory actions.

2. Foot rotation (both feet), reclining, to equalize the circulation by increasing flow of blood to the feet.

3. Stomach vibration, reclining, with knees bent. This is for its direct effect on the stomach and improvement of appetite and digestion.

4. Forward arm rotation, sitting, is to aid in respiration.

5. Trunk rotation, astride sitting, is to bring the muscles of the waist and bowels into play, and to act on circulation, especially of the portal system.

6. Knee flexion and extension, sitting, and resistive, is to strengthen the flexors and extensors of the legs and to promote circulation.

8. Back percussion and friction for its stimulating effect on the nerve centers.

Local diseases as described by Ling were those of the brain. For a disease such as anemia of the brain he recommended certain strengthening and stimulating exercises as these:

1. Chest lifting and vibration--lying.
2. Leg nerve compression, rolling, slapping, and friction.
3. Arm compression, rolling, slapping, and friction.
4. Head rotation--sitting.
5. Leg vibration--lying.
6. Arm vibration--sitting.
7. Stomach friction--lying.
8. Back percussion and friction.
9. Head percussion, kneading, vibration, and friction.

For the diseases of the various systems, respiration, circulation, and digestion, his exercises were much in the same order, with variations, as the local diseases exercises.

For a common disease or injury to an organ of movement, as a sprained ankle, Ling suggested (from Nissen (17:115-116)): First, begin with gentle centripetal stroking, starting at the toes and gradually proceeding upward to the knees. As pain diminishes more and more

force is applied, and kneading, circular and vibratory friction can be added. This is done seven to fifteen minutes twice a day. About the third day, most of the pain should have subsided, and passive flexion, extension, and rotation can be done. This is followed as soon as possible by active and resistive flexion and extension.

These exercises and massage are a few of the many hundreds employed in the Ling medical gymnastics. They provide a brief glimpse at his use of medical gymnastics to restore strength and health to weak, injured, or diseased parts of the body. Many books have been written by various followers of Ling, giving, in detail, exercises for almost any ailment within the scope of treatment of medical gymnastics. These exercises have been incorporated into the fields of physical therapy and corrective physical education more than those of any other one system of gymnastics.

Because of their early recognition as a valuable part of physical development, the Swedish system of gymnastics soon spread to many other countries. Men, not only native Swedes, but others who came to Stockholm to the Royal Central Institute, took their knowledge of and enthusiasm for Swedish gymnastics to the Continent where they became popular and spread to the Americas and to parts of the East.

Carl August Georgii, a Swede and a graduate of the Institute, was perhaps the greatest foreign missionary of Ling. He introduced Ling gymnastics into England and, later, France. Around 1850, he came to England and established a private school of gymnastics. This school was in operation until 1877, and was the center of Swedish gymnastics in England. He had been preceded by Govert Indebetton and C. Ehrenhoff, both graduates of the Institute, but it was Georgii who really



established the Ling system in England. He later took the system to France, but as France never accepted or established any one system, the Ling gymnastics were merely introduced there by Georgii. In France the gymnastics were used primarily by the military.

Another great promoter of Swedish gymnastics abroad was Von Rothstein, a German army officer and teacher, who studied under Ling in Stockholm, and brought his system to Germany. Here he was able to introduce them rather successfully into the school gymnastics, for Ling's ideas had much in common with Speiss', the result being a distinctive "flavor" of Swedish gymnastics in the German school gymnastics program. The German army, also, adopted certain Swedish military gymnastic exercises,

Many others took Swedish gymnastics to places such as Russia, Austria, the Children's Hospital in Paris, and finally in the latter half of the 19th century, to America.

Dr. G. H. Taylor, in New York, was the first to use Ling's gymnastics in the United States when he adopted the Swedish medical gymnastics. However, Swedish gymnastics did not really make their debut in this country until 1883 and 1885, when Hartvig Nissen and Baron Nils Posse came here from Sweden. Both were graduates of the Institute, and both did a remarkable job of selling their gymnastics to some leading people in the United States. In a short period of time, Nissen in Washington, D.C., and Posse in Boston, had established gymnastics schools and were promoting the Ling system throughout the Eastern United States.

Possibly no other system of gymnastics has spread as did the Swedish. The German system has spread far, but in overall promotion,

the Swedish system had more men with a strong desire to introduce it to other nations. The German system went mostly where German natives settled outside of Germany; the Swedish system went everywhere by means of its disciples. Dr. Joseph Schreiber is quoted from his "Manual of Massage and Muscular Exercise" by Nissen. (16:22) He said:

"The most powerful impetus, however, given to the revival of mechano-therapy originated with a Swede, the creator of the modern 'movement cure'; whose doctrines, spreading to England and Germany, have after many decades, and in spite of being marked by some extravagances, gained universal recognition."

Another man, the Swedish historian Stomberg, says: "It is perhaps no exaggeration to say that all modern systems of physical training are more or less adaptations of the Ling system." (25:623)

## Chapter IV

## Section I

Swedish gymnastics arrived at a fairly late date in the United States when compared with the German system, for the German gymnastics of Jahn were introduced in this country a half century before Nissen and Posse began their schools of Swedish gymnastics. This was due, mainly, to the fact that emigration from Germany due to political as well as economic forces began so much earlier than that from Sweden. Since Sweden never had the experience of great political upheavals which would have forced members of certain political factions to leave the country, she did not experience much emigration of her people until economic conditions of mid-century set her younger generations to seeking "greener pastures". The emigration to America began in the 1840's, 50's, and 60's, so there was no promotion of the Swedish gymnastic system here until the second half of the 19th century.

The German gymnastics were formally introduced into the United States by three ardent admirers of Jahn--Charles Follen, Charles Beck, and Francis Lieber. Follen and Beck were both political refugees from Germany who had become friends while in exile in Switzerland. In late 1824, the situation had become such that neither felt safe, even in Switzerland, any longer. They managed to reach Le Havre, and sailed for the United States. The friendship of Follen with the famous French general, Lafayette, who was making his grand return visit to the United States at the time of Follen and Beck's arrival, enabled them to meet some influential people. Through one of these men, Beck obtained a position at the Round Hill School in Northfield, Massachusetts. Follen

remained in Philadelphia where the two men had originally settled to study English, but was soon offered a position as an instructor of German at Harvard in 1825. Each man began gymnastics on the German Turnplatz ~~order~~ soon after his arrival at the respective schools. Although each taught gymnastics as a hobby more than as a profession, their work was the first real beginning of organized physical education in this country. Prior to this time, little physical education had been taught anywhere. When the people began to be organized a need for organized physical activity was felt. Urbanization began in the East--in New England, and in such cities as New York, Boston, and Philadelphia. And it was in these areas that the first physical education programs began; any further spread of physical education did not begin, in earnest, until the 1850's and later.

Follen eventually established the first public gymnasium in Boston, but later gave up teaching in Boston in order to concentrate on his teaching at Harvard. Francis Lieber succeeded Follen as director of the Boston gymnasium. Lieber was later to leave Boston to help establish a college in Philadelphia where he became a teacher of political economy and history. Here Lieber gained fame as one of America's leading scholars, and became known as America's "first academic political philosopher." (21:209)

Beck, who first taught German gymnastics in the United States while at the Round Hill School, became a professor of Latin at Harvard, and later, a Unitarian minister and leader in the fight for the abolition of slavery.

Besides the limited gymnastics established by Follen and Beck,

some gymnastics were taught in the schools, mostly private, of the early 19th century. These schools were all in the New York-New England region, the most well-known being the New York High School founded by John Griscom and set up on the foundations of the Pestalozzi and Fellenberg ideals. Griscom had visited Europe and seen gymnastics in Amoros' school in Paris, and at the schools of Pestalozzi and Fellenberg, and had seen the value of the gymnastics programs in them. He introduced gymnastics to his school, where they were popular and successful.

In colleges, the first to establish a real program in physical education was Amherst College. Other schools, such as Yale, Harvard, and Dartmouth also introduced gymnastics into their curricula under the instruction of recently emigrated Germans, but Amherst was the school which first gave full recognition to gymnastics and physical education as an academic subject by appointing Dr. Edward Hitchcock, a Harvard medical school graduate, to the position of Professor of Hygiene and Physical Education with full faculty status. This did not occur until 1861, but Amherst had already begun a gymnastics program in the 1820's which eventually led to the construction of a gymnasium in 1859-60 and the appointment of Dr. Hitchcock in 1861. The role played by Dr. Hitchcock and the program in physical education at Amherst was to be a "trail-blazer" for the establishment of other departments and programs of physical education all over the country. Hitchcock was a leader in organization and administration of physical education. However, Dr. Hitchcock did not develop or establish any system of gymnastics or physical education. He followed, basically, a system developed by Dio Lewis, who had begun his physical



education system a few years earlier.

German gymnastics lost their popularity after their initial introduction by Follen, Beck, and Lieber. Only in the Boston area did they maintain their status from the 1830's until about 1848 when another mass emigration from Germany to the United States occurred. There were several reasons behind this. First, as mentioned before, there was little need felt for organized gymnastics or physical education due to the pioneering activities of the young nation; second, except for military purposes, there was no call for great physical strength among those who were not farmers or moving pioneers; and, third, the schools of the country were not yet established on a firm basis outside the more populated northeastern United States, and many of these were private schools emphasizing literature and the classics. What little of physical education and gymnastics there was outside the schools already mentioned, was conducted primarily in private gymnasiums and was primarily German gymnastics.

With the new wave of German emigrants following the liberal revolutions in Europe in 1848, came a revival of the German gymnastics. These emigrants were a highly intellectual group, and a group greatly interested in the physical as well as mental welfare of people. They settled mainly in the Midwest and soon the first Turner group was organized in Cincinnati, Ohio. A few years later, in 1851, the first national outdoor gymnastic meet, or turnfest, was held by the Turners in Philadelphia. Their aims were primarily to promote physical education, especially through German gymnastics. Even so, it was not until the 1880's, about the same time or shortly before the introduction of

Swedish gymnastics, that German gymnastics had much influence outside of the Turner organizations and the areas of large German population. But, although German gymnastics did not actually have a great deal of influence on physical education until later, the revival of German gymnastics did aid in stimulating interest in organized physical education in the schools--an interest which had been slowly growing since the 1830's, but had not been cultivated until mid-century. Possibly one reason for slow adoption of German gymnastics as organized by the Turners, was the political affiliations of the German-American Turners. They tended to be abolitionists, and the Executive Committee, with headquarters in Baltimore just prior to the Civil War, issued letters requesting all Turner organizations in the United States to vote for Lincoln and the Republican Party. After 1861, the Turnerbund, as the national Turner organization was called, was suddenly left without national headquarters when riots in Baltimore forced the Executive Committee to flee the city. During the years of the Civil War, there were no official headquarters for the Turnerbund, but Turners turned out by the thousands to fight in the Union Army, many forming regiments made up entirely of Turner society members or former members. One regiment from Missouri had such a majority of Turners that it was known as the Western Turnregiment. (13:298)

In 1866, the Turnerbund established a normal school for the training of teachers in the theory and practice of German gymnastics. This school was opened in New York, but later moved to Chicago, and finally to Milwaukee, where it came under the directorship, from 1875 to 1888, of George Brosius, who was the greatest early leader of German

gymnastics instruction in the United States. Teachers from this normal school soon became prominent in public school physical education programs as well as in other capacities. The beginning of the Turnverein, or normal school, was the beginning of major influence by German gymnastics in physical education, for they now became a part of the educational program of the country.

In the same period that the German gymnastics system was gaining a foothold in the physical education of the United States, two other systems, both strictly American in background, were being devised and developed. These were the systems of Dio Lewis and Catherine Beecher. The Swedish system was still some twenty years in the future of the United States, although Swedish immigrants were beginning to settle in this country at this time.

The first of these two early American physical educators was Catherine Beecher. Miss Beecher was a member of the famous Beecher family, a sister of Harriet Beecher Stowe and Henry Ward Beecher, and therefore, was reared in a rather exclusive environment, being tutored privately until ten years of age. While still in her early twenties, Catherine Beecher established her famous Hartford Female Seminary. It was here that she began her system of calisthenics for girls which required twenty-seven years to perfect. Her decision to begin her unique system of exercises for girls came after observing the poor physical condition of those at her school, and after rejecting German gymnastics as being too rugged for girls. Taking exercises from many sources, chiefly European, and with great respect for physiological needs, Miss Beecher devised a system of gymnastics which was the first

truly American system of gymnastics adapted to the needs of Americans, American girls in particular. She later moved to Cincinnati, and later established the Western Female Seminary, and from there began making extensive lecture tours for the promotion of education, and especially physical education. She is quoted as saying at a lecture in Cincinnati in 1837, that:

"When physical education takes its place in our schools, young girls will be trained in the classrooms to move head, hands, and arms gracefully; to sit, stand, and walk properly and to pursue calisthenic exercises for physical development, as regular school duty as much as their studies; and these exercises set to music, will be sought as the most agreeable of school duties." (21:200)

Besides her system of gymnastics, or calisthenics, and her lecturing, Miss Beecher also wrote two books, A Course of Calisthenics for Young Ladies in 1831, and Physiology and Calisthenics in 1858. Her first book, the first on physical education in America, earns, in part, for her the title of the first developer of an American gymnastics system, and, without any competition, the first true woman physical educator in this country. She promoted physical education in the schools and headed groups of women interested in education, raising, through them, funds to train and send women teachers to the rapidly growing west which was at that time the Mississippi Valley regions.

Catherine Beecher's great contemporary was Dio Lewis, with whom she worked for a short time. They disagreed, however, on their systems of gymnastics and she left him to return to her promotional work.

Lewis was some twenty years younger than Catherine Beecher, and was approximately thirty years later than she in presenting his system to the United States. His background was not so exclusive as hers, as



he came from Welsh farmer stock which had settled in upstate New York. At the age of twelve he quit school and went to work, becoming a teacher three years later. At nineteen he began studying medicine, and received an honorary degree in medicine nine years later. It was because of this honorary degree that he always referred to himself as Dr. Dio Lewis in later years. He then began touring as a lecturer on health and temperance. Illness of his wife, and an interest in physiology, plus a trip to Europe for further study of physiology, aroused a desire in Lewis to create a program for Americans by which they might have a strong, sound bodies to accompany their inquiring minds. He had seen how exercise had helped his wife, and in his travels abroad he observed the gymnastic exercises of various countries, particularly those of Germany. Lewis felt, however, that German gymnastics were not appropriate for the needs of his countrymen, so he began formulating a system of his own. After several years of work, Lewis, in 1860, presented his new system to the public by beginning classes in Boston for men, women, and children. The system came to the attention of educational leaders almost immediately, and at the convention of the American Institute of Instruction held in Boston in that same year, Lewis was invited to speak and present a demonstration of his exercises. The demonstration was a complete success, and this very convention recommended the use of Lewis' gymnastics in the schools and for general use.

The following year, Lewis opened his Normal Institute for Physical Education, his chief reason for establishing himself in the Boston region, where he believed education to have its center in the United States. This school was the first teacher-training institute in physical education in the United States, and the first in the field for women.



Lewis' exercises used very little apparatus, and what was used was light, designed less for strength and more for flexibility and agility. Exercises were done to music and both men and women participated at the same time. Also included in his instruction at the Normal Institute were courses in anatomy and physiology, hygiene, and principles of the "Swedish Movement Cure", or Swedish Medical gymnastics. This instruction in Ling's medical gymnastics was one of the earliest uses of Ling's system, as a part of the field of physical education, in this country.

In 1864, Lewis left the Normal Institute in Boston to establish a school for girls in Lexington, Massachusetts. Here, for three years, he further promoted his "New Gymnastics". He catered a great deal to girls of poor physical condition and was highly successful. In 1867 the school burned and, although new quarters were easily obtained, Lewis had tired of this venture and returned to lecturing. The school closed, and as it did, the most active part of Lewis' career in physical education ended. He continued to promote physical education in his lectures, but he now returned to his earlier interest in temperance, organizing a crusade of women which eventually became the Women's Christian Temperance Union.

Until the introduction of the Swedish gymnastics by Posse and Nissen, the systems of Beecher, Lewis, and the German gymnastics were the predominant programs in physical education. Then, in the mid-1880's, the Swedish system was formally introduced into the physical education of this country, offering strong competition to all those systems in use, especially the German system.

## Section II

Baron Nils Posse, a son of nobility, was a native of Stockholm,

Sweden, and a graduate of the Royal Central Institute of Gymnastics. Immediately following his completion of the course at the Institute, he left for America. This was 1885 and Posse was only twenty-three years old.

Baron Posse's primary aim was to establish medical gymnastics as an affiliated field with the medical profession. At first he had difficulty in convincing the doctors of the Boston area, where he settled, of the worth of his ideas, but as fate would have it, there was living in Boston a very wealthy woman, Mrs. Mary Hemenway. Mrs. Hemenway was vitally interested in education, and at this time, especially in physical training of school children. Her son had, a few years before, presented Harvard with the Hemenway Gymnasium. Attention to Posse was drawn to Mrs. Hemenway by a friend who was acquainted with Swedish gymnastics. Mrs. Hemenway was impressed and had Posse demonstrate the Ling system to some women public school teachers in the area. A few months later, through Mrs. Hemenway's offer, free training of 100 school teachers for a year began so that they might use the system in their schools. Posse was to teach the new classes. In the same year, 1888, the Ling system was recommended, although not officially proclaimed, as the authorized physical training system of the Boston public schools. The famous Boston Normal School of Gymnastics opened in 1889 with Posse as its first director. With Mrs. Hemenway and her able "right hand", Amy Morris Homans, backing them, the Ling Swedish gymnastics were, in 1890, officially ordered to be taught in all Boston public schools.

Meanwhile, another Swede had also begun the establishment of Swedish gymnastics in this country. This was Hartvig Nissen, who had

come to the United States in 1883, and established his "Swedish Health Institute" (13:329) in Washington, D. C. However, it was in Boston, with Posse that the real promotion of Swedish gymnastics was accomplished. Nissen went to assist Dr. Edward M. Hartwell in the Boston public schools in 1891, and then acted as director of physical training there for three years beginning in 1897. Nissen also became an instructor in Swedish gymnastics and massage at Harvard's Summer School and at the Sargent Normal School of Physical Education. In 1915, he became president of the Posse Normal School of Gymnastics, with a controlling interest in this school. Besides his active work in Swedish gymnastics, one of Nissen's greatest contributions to the promotion of the system was his writings. He was the author of several noted books on Swedish gymnastics.

Posse, in Boston, was soon succeeded at the Normal School, but he continued to work fervently for the system he loved. He opened his own gymnasium, the Posse Normal School of Gymnastics, and wrote numerous books and articles on Swedish gymnastics, especially educational gymnastics. According to history (13:333) "gymnastics according to his methods were officially introduced into the public schools of fifty-two cities and towns, and into as many more private institutions and academies. Clinics for medical gymnastic treatment were established by him in most of the larger Boston hospitals, and instruction was given to the nurses of many hospitals in adjacent towns." All this, from Posse's emigration to Boston until his death, occurred in ten years, for Baron Nils Posse, a promoter of better health, lived only thirty-three years.

Perhaps the single greatest event in the promotion of physical education was the "Conference in Interest of Physical Training" in 1889. This conference was called by Mrs. Hemerway and Miss Homans and was led by the United States Commissioner of Education, William T. Harris. To this conference came most of the leading educators and physical educators, who gave it unusual prestige. And it was at this conference that the great rivalry that was to exist between the two great systems, the German and the Swedish, really began. Here advocates of both systems discussed, sometimes in a rather heated manner, the pros and cons of the two systems. Papers were presented, and speeches were made describing the two systems and explaining why the believers in each felt the way they did. In a sense, the Swedish system promoters were making their stand to prove the worth and value of their system in comparison with that of the older, more established German system. Supporters of the German system felt that the Swedish system was "too formal, uninteresting, failed to obtain recreational values, and was too weak in social and moral training." (21:218) Those people claimed that the Swedish gymnastics were antiquated, but were given the reply that the system had been improved since Ling's time. The supporters of the Swedish system claimed that "the German system lacked scientific foundation, that too much music and rhythm accompanied the exercises and thereby prevented the maximum physical benefit from being derived, that too much emphasis was given to the recreational and not enough to the educational results, and that the system was unable to cope with problems of individual and specific weaknesses." (21:218-219) The Swedish system, it was pointed out, disapproved of the use of music, for it was felt that



there were few rhythmical movements in gymnastics--gymnastics create their own rhythm. It was emphasized that the Swedish gymnastics did not rely on the use of apparatus but on exercises for its existence.

The German system followers retaliated that the Swedish movements were too jerky for gracefulness; that the slow manner of movement was mistaken for grace, but was not. Prominent men were to be found on both sides--Dr. Edward Hitchcock threw his support to the Swedish gymnastics; Dr. Edward M. Hartwell, at that time associated with Johns Hopkins University, backed, more or less, the German system.

In the process of the conference, three major factors of each system were noted. Those of the German system were:

1. Aims at general physical culture and not culture of one special branch.
2. Allows, or induces the exercises in classes.
3. Instruction begins with the most simple and ease movements and proceeds gradually to a higher degree. (1:24-25)

The main points of the Swedish system were:

1. How exercises are selected-gymnastic value.
2. Regularity of method-progression.
3. Method of applying exercises-movements are applied to words of command--the pupil concentrates solely on movement. (1:42-48)

The rivalry between the two systems of physical education was to last for some years until gymnastics began to lose popularity as the only means of physical education. The Swedish system took over the place of German gymnastics in most of the eastern United States, to be followed by the adoption of Swedish gymnastics in most West Coast schools.



Nissen had been in Oregon for a short time before taking over the Posse Normal School and did much to bring Swedish gymnastics to that state. The German system maintained its leadership in the Midwest, the center of German-American Turner societies.

A major boost to Swedish gymnastics came when the Boston Normal School of Gymnastics was made a part of Wellesley College. As in England, the first great benefactor and promoter of Swedish gymnastics was a woman. In the United States it was Mrs. Hemenway, and it was Mrs. Hemenway's colleague, Amy Morris Homans, who became the first director of the new department of Hygiene and Physical Education (the old Boston Normal School) at Wellesley. Miss Homans' energy and dynamic leadership brought to the department at Wellesley the position of almost undisputable leadership in the teaching of formal gymnastics (the Swedish system) and in the training of women physical education teachers. The influence of Miss Homans and her department was felt everywhere a Wellesley-trained teacher of physical education went, and this included a large part of the nation. Especially in women's physical education were Swedish gymnastics strong. Their scientific approach to all-around development seemed to appeal much more to women than did the German system which tended more towards power and strength development. Miss Homans' work did not long go unnoticed. Her great reward came when Wellesley added the awarding of a degree of Master of Arts to those who earned it from the Department of Physical Education of Wellesley College. According to Norma Schwendener (23:120-121), this was Miss Homans' brightest day. In her book, Miss Schwendener says:

"The realization that she, through her efforts had raised this department to a plane of recognized intellectual and scientific integrity gave Amy Morris Homans a consciousness of full

accomplishment. In this fact lay the fulfillment of her aspirations and services. She craved no fame or transient glory but held unassumingly, courageously, and tenaciously, to her ultimate purpose."

That she did hold to her ultimate purpose is indicated by the fact that Miss Homans, with an already strong staff and leading department, kept striving for an even better department. To a department which led in teacher training and research, she added a young Swedish-trained physical educator, William Skarstrom, a former student at the Royal Central Institute in Stockholm and of the Posse Normal School in Boston. It was because of, and through, Skarstrom that the first real alterations were made in the Ling system. Up until his time the advocates of the system had been rather stubborn about making any revisions, even in the light of glaring weaknesses in the system. These weaknesses especially stood out in a country where life was quite different from Ling's native Sweden. Skarstrom realized that to be truly successful in this country, the Swedish gymnastics system of Ling had to be adapted to American needs. He broke tradition because he knew that Americans differed from Swedes. Skarstrom revised the system by relieving it of its strong militaristic character, and by equalizing the amount of tension and rest in the exercises. The long periods of tension and short periods of rest had been characteristic of the system. Skarstrom's work and his writings were soon widely noted and influential. Sweden itself awarded Skarstrom the title of Duke of Vasa, one of her highest honors.

Paralleling the work of Miss Homans was that of several other noteworthy leaders of Swedish gymnastics in the United States. Claes Julius Enebuske took over the directorship of the Boston Normal School after Posse left. He, too, was a native of Sweden, but, unlike so many

of the other early Ling system supporters in this country, he was not a graduate of the Royal Central Institute of Gymnastics. However, he did take special instruction in school and medical gymnastics at the University of Lund in Sweden. After arriving in this country, Enebuske assisted Dr. William Anderson, one of the great organizers of the physical education program and the man responsible for the conference in 1885. This conference was the beginning of the Association for the Advancement of Physical Education, now the American Association for Health, Physical Education, and Recreation. Enebuske remained at Anderson's Normal School in Brooklyn for a year before going to the Boston Normal School in 1890. While at the Boston school, Enebuske did his greatest works in teaching and promoting Ling gymnastics, but he was there for only eight years before resigning and eventually moving to Paris.

Enebuske was succeeded at the Anderson Normal School of Physical Education by Carl Bolin, another Swede, who had come to this country, then returned to Sweden for a year's study of medical gymnastics at the Liedbeck Institute in Stockholm. Bolin had then taught physical education at the University of Utah, taking the Swedish gymnastics there with him. Besides instructing at the Anderson Normal School, Bolin also practiced medical gymnastics and massage in New York.

Carl Oscar Louis Collin was the third member of what Miss Schwendener calls the "triumvirate". (23:119) Collin was, as the other two, a Swede, and he, too, studied at the University of Lund and took courses in gymnastics, although he was not a graduate of the Royal Central Institute. After joining Enebuske in New York, he taught gymnastics and, later, anatomy at the Boston Normal School. Collin was interested in medical

gymnastics and, as did Enebuske, he eventually graduated from the Harvard medical school. Collin also attended a special summer session in medical gymnastics in Sweden. After Enebuske resigned from the Boston Normal School, Collin succeeded him, remaining there as its chief instructor in theory and practice of gymnastics for three years after the Normal School became a department of Wellesley in 1909. He later went to the Battle Creek Normal School and finally, to the Chicago Normal School of Physical Education. At these last two schools Collin promoted Swedish gymnastics in the heart of the territory of the German system.

These three men (Enebuske, Collin, and Bolin), William Skarstrom, and Amy Morris Homans were the people who established Swedish gymnastics on a sound basis after the introduction of the system by Posse and Nissen. Through them and the normal schools at which they taught, and, of course, the department at Wellesley, the system was spread to all corners of the United States. The teachers they trained were to be found in private normal schools everywhere, in private academies, and in public schools throughout the eastern and far western United States and in some parts of the Midwest. There were others, of course: Alice Tripp Hall, a Wellesley graduate, who visited the Royal Central Institute in Sweden, and introduced Swedish gymnastics into the physical education program of the Woman's College of Baltimore (Goucher College) by bringing graduates of the Royal Central Institute, Mathilda Kristina Wallin, Gulli Oberg, and Maria Palmquist, to teach in her department; Dr. Kate Campbell Hurd, who brought Fanny Schnelle, a graduate of the Royal Central Institute, to teach at Bryn Mawr; and, Senda Berenson, a graduate of the Boston Normal School of Gymnastics, who introduced Swedish gymnastics to Smith College.



One more important contribution to Swedish gymnastics in the United States was the gift of Mrs. Hemenway which provided for the publication of many of Hjalmar Ling's illustrations of movements and positions, which Per Henrik Ling had devised. These works, half of which are in Sweden, are literally the Bible of the advocates of the Ling system. In them are his life's work.

These systems, the German and the Swedish, each made their contributions to physical education in the United States. They both strongly influenced our programs, and the women, in particular, adopted the Swedish system and incorporated it into their programs. However, as one regards the general American system of physical education, it is obvious that gymnastics, as such, are only a part of the program--at the present time only a small part. Typical of the American people, their interest in physical education is in the direction of the more exciting aspects--the games and sports which offer recreation and relaxation for pure enjoyment, not necessarily for their value as developers of the body. Because of this interest our present day program includes much more than gymnastics. The one person most responsible for our present system, or systems, of physical education was Dudley Allen Sargent.

Dr. Sargent was born in Maine in 1849, near Penobscot Bay. While still in high school he and some other boys set up some gymnastic apparatus on the school ground and began a gymnastics club. They soon became fairly expert in executing gymnastic skills. Even before entering college, Sargent directed gymnastics at Bowdoin College not far from his home. He graduated from Bowdoin in 1875, continuing his instruction of



gymnastics while a student there, and obtained a medical degree from Yale in 1878. From here he went to New York City, where he conducted a private gymnasium and began work on the system he had long dreamed of developing. A year later, in 1879, Sargent was made an instructor of physical education and director of the new Hemenway Gymnasium at Harvard. It was while he was here that he did the major part of his work. Although technically an instructor of gymnastics, he included all phases of physical education in his work. He drew from all the systems of physical education of his day, using what he considered best in each system and modifying, altering, or enlarging to suit his needs. He felt that strength and activity were not the primary purpose of physical education, but that development so as to increase health and endurance was the purpose. (23:95) He stressed hygienic living and physical exercise, scientific diagnoses and approaches to physical education, and good teacher training in physical education. In regard to training, he expressed the view of those believers in the German system of gymnastics, that individual muscles should be trained, rather than the entire muscle system at once. In this case, he demonstrated a preference for the German system over the Swedish, but, even so, he was never a strong advocate of the German system as a program of physical education.

Sargent's influence on physical education was felt strongly in every aspect. He was prominent in work in teacher education, athletic promotion, curriculum construction, tests and measurements, and construction and use of gymnasiums and gymnastic apparatus. He added much to the respectability and status of physical education through his insistence on professional training of physical education teachers, and his belief in a serious, exact, and scientific approach to the field.

Sargent (22:66-70) listed four aims in physical education. In these, he had a lasting and firm belief, and it is these views which have had so much guiding influence on present day physical education. The aims are:

1. Hygienic--the normal proportions of an individual should be considered in order to determine normal growth and development as should, also, the anatomy and physiological functions of various organs, climate, occupation, nurture, history, temperament, and inheritance of the individual.

2. Educative--the special powers of mind and body which are generally engaged in some skillful trade or physical accomplishment should be cultivated. Educational activities such as these include swimming, boxing, tennis, golf, dancing, and others, plus feats on heavy gymnastic apparatus.

3. Recreative--"Recreation may be defined as that which, with the least expenditure of time, renders the exhausted energies best fitted to resume their work." (22:69) Recreation should not be a past-time for pleasure alone, but should be an act of duty undertaken for the power and profit that can be derived from it. The primary aim should be to secure a frequent change of organic activity.

4. Remedial--efforts to restore disturbed functions and correct physical defects and deformities. The former are "medical gymnastics"; the latter, "corrective gymnastics".

To Dr. Sargent, principles, rather than methods or systems, were more important. It was for this reason that he used all systems, so as to improve physical education and make it a field that met the needs

of the American people. He wanted to improve physical education by the best means possible. It was Sargent more than anybody else who "hit a happy medium" between the German and Swedish systems and between these two systems and the systems of Lewis, Beecher, and others. He may have used one more than the other, but he put physical education as a part of education on a firm foundation in the United States. Sargent's work extended into the twentieth century--the century of the great change from formal exercises and gymnastics as the major part of the physical education program to less formal games and sports as the major emphasis.

Until the present century, gymnastics were physical education for the most part, with sports in the program only as extra activities. After a brief interest in the French Delsarte System of Physical Culture, a system designed to give poise, grace, and health, gymnastics began to lose their appeal about 1900. Both the German and Swedish systems, as well as other systems, were considered no longer satisfactory as the only means of physical exercise. The YMCA under R. J. Roberts developed a system of gymnastics in the early part of the century which was designed to meet the needs of boys and men, but this was restricted almost entirely to YMCA's.

The German system during this period was promoted primarily by YMCA's and the Turners in areas where families of German origin had settled. Outside of these groups, however, the German gymnastics had lost most of their appeal and were little used.

As the German system was losing its popularity in the early 1900's, the Swedish system was gaining in popularity. Individual health and physical correction had become important in the minds of Americans at

this time. The medical and corrective aspects of Swedish gymnastics were, therefore, appealing, and the Swedish system was taught in almost every woman's physical education department in the country, and in many public and private schools. The modifications made by Skarstrom added to the enthusiasm for Swedish gymnastics. But, even with the increased popularity of Swedish gymnastics, this was not a revival of interest in gymnastics as a whole, but the beginning of a new program in physical education--the corrective physical education program.

The 1920's saw Danish gymnastics, as organized by Nils Bukh, largely replace the older systems of gymnastics. Although it contained many of Ling's methods and exercises, the Danish system utilized rhythmic action which the others, especially the Swedish system, did not and, therefore, had a greater appeal to the American, especially the women.

The major reasons why gymnastics as used in the Swedish and German systems were no longer useful as the entire physical education program were stated by Thomas D. Wood, (28:248) a leading twentieth century physical educator, in the Ninth Yearbook of the National Society for the Study of Education. They were:

"1. It (gymnastics) sought postural and corrective results that are not satisfactorily obtained in class exercises by formal movements involving consciousness of muscle and body by the pupil. Except for individual cases needing remedial gymnastics, these results may be gained as well or better through exercises that are more natural, spontaneous, and enjoyable.

"2. It concentrated too much upon the body and lacked sufficient regard for the attitude of the mind and the effects upon disposition and personality.

"3. It developed various forms of ability that are not closely enough related to activities of human life to justify the time and effort given to them."



These three reasons of Wood's were, in essence, the general feeling of the American people towards gymnastics. They wanted less formal, more enjoyable activities. In the years before World War I, sports activities began to become an important part of physical education and after the war, gradually became the major part of the program. As wood had said, the need for formal gymnastics was negligible except in the case of an individual requiring remedial gymnastics. Games, dancing, swimming, sports, athletics, and a less formal and more educative gymnastics became the program of American physical education.

### Section III

The need of remedial gymnastics brought into existence what was then known as "individual or corrective gymnastics". Interest in the handicapped, and in those suffering less serious defects, had greatly increased as health and health problems gained importance as a major social and economic concern in this country. The corrective program before World War I, however, was made up of formal exercises like those found in the Swedish system. After the war and with the introduction of the Danish gymnastics, physical educators began to see the usefulness of a less formal program for correction. They realized that a program which included some games and sports as well as exercises would be most profitable to the atypical student in physical education. The First World War had sent home many men with many defects which could never be corrected, such as amputations and mental disorientations. Corrective programs in physical education developed, especially in women's departments, fairly steadily until World War II. It was this second great war that really stimulated the corrective program. After 1945,



corrective physical education began to become a real part of the school physical education program. Prior to this time it had been limited, to a large degree, to college physical education. The students in corrective classes are now encouraged to read and try to understand about their problem, whereas, in the earlier years of the program, too often an atypical student felt set apart, sometimes when he had only a very minor defect. This problem of students with minor defects has been solved somewhat by placing only those with more serious physical or organic defects in special classes and placing those students with minor problems in regular classes, but providing outside conferences and aid for them if they desire it. As many games and sports activities as possible are now a part of corrective physical education, with the formal exercises serving as a supplementary material. The great stress on physical fitness which has arisen since World War II, has put much pressure on physical education, and on corrective physical education, as a means of alleviating many of the defects found in present day students, such as rounded shoulders, spinal deviations, flat feet, and general weakness.

Corrective exercises as used in the physical education program are derived, almost in their entirety, from the medical gymnastics of Ling's Swedish system. Lillian Drew (5:19) divided medical gymnastics into two parts in order to facilitate the understanding of them and to emphasize the part which concerned individual gymnastics.

1. Those medical gymnastics applied to medical conditions are called "remedial".
2. Those applied to orthopedic conditions, or those of impending or existing deformity, are called "corrective gymnastics".

In this light, it is seen that "remedial" gymnastics would have therapeutic value when dealing with such defects as cardiac problems, while "corrective" gymnastics would be of therapeutic value for a curvature of the spine. F. J. Lipovetz (14:3) restated this in his definitions of corrective physical education and remedial physical education. Corrective physical education, he said, is "a technique of physical education involving the counteraction and modification of structural deformities by exercise." Remedial physical education is "a technique of physical education involving the curing of organic deformities and disturbances by exercise." Mr. Lipovetz also included a third definition, that of preventive physical education, a very closely related part of the program of corrective physical education. Preventive physical education is "a technique of physical education involving the warding off of functional deformities by exercise." Because of its close relationship to corrective work, one often hears this part of the program referred to as Preventive and Corrective Physical Education. The aim is to prevent, if possible, and to correct if there has been no prevention.

Because of its close relationship to health matters, the corrective physical education program is set up in close correlation with the health program of a school. In applying corrective measures, the physical educator often consults doctors and nurses who are connected with the school health program, and in turn these medical specialists often advise the physical educator and request his or her services in dealing with problems of organic or more often, structural nature. Health records, tests, and measurements play a large part in this aspect of physical education.

In the setting up of a good correctives program, the new ideas of making the activities, whether formal exercises or games, as pleasurable as possible have been the prime objectives. Some teachers, mainly women, realizing the enjoyment derived from dance, have tried to use this as a means of correction or, usually, rebuilding. Unfortunately, they have gone too far with this idea, for, even though dance does have some advantages along this line, it is not as valuable as many believe. Dance tends to be more useful in preventive physical education, but not in correctives. Enjoyment in correctives must be obtained through a stimulating leader and subjective use of the body. When these factors are present, gymnastic exercises are a source of pleasure, for the student has a feeling of satisfaction after completing the exercises, and the physiological effect on the body is good.

Another prime factor in a good correctives program is the psychological effect of a teacher who is a fine exemplification of what is trying to be accomplished. It is important that a teacher of corrective physical education enjoy good health and have a sound, well-developed body to set an example for which the students can strive.

Intellectual appeal is a third factor most necessary in a correctives program. The teacher must know the reasons for various activities and be able to explain them to the student. When the student knows and understands the reasoning behind what he is doing and the effect it will have on him, he is more inclined to work hard.

These three factors--the physiological benefits from pleasure, the psychological benefits from example, and the mental benefits from intellectual appeal--are what make a correctives program successful.

The order of exercises, the environment, and the available space and equipment are also important factors in a corrective physical education program, but will not be very effective if the other three are not present.

In general, the correctives program deals with free exercises and light equipment as its parent, Swedish medical gymnastics, does. The actual order of exercises varies some, but is generally the same in over-all results as medical gymnastics. The exercises are active, passive, resistive, and assistive as in Ling's system. Lipovetz (14:38) offers a general order for doing free exercises and apparatus exercises. For free exercises, he gives this order:

1. Circulatory--running, jumping, etc.
2. Breathing--for postural cases only.
3. Mobilizing--head-arm-trunk-leg suppling or freeing (as leg swings)
4. Stretching--active to passive positions
5. Resistive or strength
  - a. by an assistant
  - b. by body part-weight (gravity)
  - c. anti-joint mechanics (friction)
6. Corrective stunt--by individual or group
7. Relaxation--sitting or lying

For apparatus: same as free exercises, except

1. Breathing is eliminated
2. In either body part-weight or anti-joint mechanics, assist the pupil if necessary.

To elaborate on the corrective physical education exercises and to show their relationship to Swedish medical gymnastic exercises, some specific exercises used in correctives are necessary.

Some of these exercises are:

1. Passive chest-lifting--to increase antero-posterior flexibility. Pupil is sitting on stool, feet on floor, hands at neck. Teacher grasps the pupil's elbows and draws them slowly backwards and simultaneously pushes forward with the knee on the dorsal convexity. Relax. Repeat ten to twenty times. (5:103)

2. Vertical arm flexion and extension-resistive. Pupil is sitting, teacher behind. Teacher holds both hands of the pupil and presses a knee against the pupil's back with a small pillow between. The teacher resists as the pupil bends the arms close down to the side and stretches the arms to the vertical position. Repeated from five to fourteen times. (16:93-94)

3. Correcting lordosis (hollow back)--active--long-sitting position. Pupil sits on floor, with legs extended forward, keeping the back erect. If, especially at the beginning, it is easier, the pupil may sit with his or her back against the wall. (5:116-117)

4. The "grip walk" (for feet)--active. Step forward with one foot. As the weight is brought forward, grip strongly with the forward foot. Relax as the next step is taken and repeat. (5:221)

5. For round shoulders--assistive strength exercise--resistive. Teacher or other member of class either faces the individual or stands behind him, grasps the head with both hands and applies gentle resistance to the firm head movements of, first, circumduction of the head to the left, right, and, second, rotation of the head left and right. Circumduction of the shoulder, forward and backward, follows, with elbows bent. This will strengthen the important muscles and ligaments of the neck and shoulder joint. (14:70)



These exercises reveal the stress put on correcting posture in corrective physical education, something not emphasized as much in medical gymnastics, but nevertheless still present in them. This is primarily because in medical gymnastics, the "remedial" exercises are as much a part as the corrective or orthopedic, while corrective physical education tends to put more stress on the orthopedic aspect, although problems of an organic nature are considered. Corrective physical education includes therapeutic treatment of such organic problems as constipation and dysmenorrhea, but does not give much consideration to such problems as anemia or cardiac diseases. These are left to the medical doctor to treat.

#### Section IV

The introduction of medical gymnastics into hospital use was the first real beginning of the use of therapeutic exercises in physical therapy, a field with close connections to correctives. Posse taught medical gymnastics to hospital staffs in the Boston area in the 1890's, and from here their use in hospitals and clinics spread throughout the country. They had been used previously by private doctors for medical purposes, but when they became a recognized part of the relatively new field of physical therapy, therapeutic exercises came into general rather than occasional medical use.

The field of physical therapy is closely connected with correctives; however, since the field of physical therapy includes far more than exercises for correction, corrective exercises are only a part of it. Physical therapy is the treatment or prevention of disease by any physical means, whether it be water (hydrotherapy), chemical (chemotherapy), heat (thermotherapy), electricity (electrotherapy), massage

or exercises. Many of the exercises used in physical therapy are the same as, or very similar to, those used in corrective physical education, and, therefore, can trace their origin back to medical gymnastics, and Swedish medical gymnastics in particular. One of the major differences lies in the type of patient each treats. Physical therapy is used primarily in the treatment of patients who have been afflicted with such diseases as poliomyelitis, cerebral palsy, arthritis, or other crippling diseases, or have received injuries which have damaged the nervous or muscle systems. Corrective physical education deals more with students, or patients, whose poor development has caused some organic or structural defect, especially in relation to their posture. In corrective physical education, as in any education, the stress is on teaching the student to do for himself; to improve, actively, his condition as much as possible. It is education through the physical. In physical therapy something is usually done for the patient, while the patient is inactive or semi-active; many of the exercises are passive or assistive, at least at the beginning of treatment, and the other methods used, as thermotherapy, are all more or less passive in nature. Corrective physical education, and physical education as a whole, is active, or teaching the student to act; physical therapy is more passive.

The brief history of physical therapy reveals its relationship to corrective physical education and, also, shows its much wider scope of treatment.

After the Middle Ages, as with other fields dealing with the physical, physical therapy practices began to develop. However, it was not until the last 100 to 150 years that the various aspects of

the field began to come together as one big field. Each part developed, more or less, on its own at first.

Perhaps the oldest of the treatments is heat, either by water or sun. Hot springs were long a major source of heat, therefore making thermotherapy and hydrotherapy one means of treatment. The use of water as a therapeutic agent was given its modern impetus by Vincent Priessnitz of Austria. After seeing for himself the wonders done by water, especially cold water, on his own injured body, he began to treat his neighbors. His fame grew rapidly and he died in 1852, a rich man. However, Priessnitz did not establish hydrotherapy on a scientific basis. This was not accomplished until after his death by Dr. Wilhelm Winternitz of Vienna. By means of Dr. Winternitz's pupils, Dr. Simon Burch, hydrotherapy, as a scientific therapeutic agent, was brought to the United States. Dr. Burch and Dr. John Kellogg, of the famous Battle Creek family, were the chief leaders of water treatment in this country. Dr. Kellogg, in fact, played a major role in the establishment of several physical therapy treatments in the United States.

The use of heat as a therapeutic agent, from sources other than water, did not really begin until William Herschel of Germany discovered infra red rays, and the Englishman John Tyndall showed how luminous rays could be converted into heat rays. When these two methods were perfected thermotherapy had a scientific foundation. Tyndall's use of light rays for heat was a direct advancement of heliotherapy, or sun treatment, which was put on a scientific basis by Oscar Bernhard and Auguste Rollier, two Swiss doctors, in the early twentieth century, when they discovered the value of sun treatment for tuberculosis. Niels Finsen,

in Denmark, perfected the use of artificial light to some degree in 1893. Heraerus then devised tubes which allowed ultraviolet rays through the tubes and made intensive radiation possible for therapeutic treatment. Heat therapy and light therapy, although not exactly the same, are so closely related that it is sometimes hard to distinguish between them, especially with modern use of radiation for treatment. Thermotherapy is considered a branch of physical therapy in its own right, and yet, both it and heliotherapy are a part of electrotherapy since the inception of artificial heat and light.

Electricity has been a great boon to physical therapy. It has provided innumerable methods of artificially producing heat, light, chemical, and mechanical therapy. With Michael Faraday's induction coil, William Du Bois and Reymond, G. B. A. Duchenne, and W. H. Erb were able to establish the laws of electrophysiology--the stimulation of muscles and nerves by galvanic and faradic currents. Soon after, in 1888, the sinusoidal current for muscle stimulation was explained by Dr. Kellogg. The most recent discovery, and one of the most useful, in electrotherapy is diathermy. This was first developed by R. von Zeynek and F. Nagelschmidt of Germany. There are two kinds of diathermy; short wave diathermy, developed in the United States and in Germany; and, microwave diathermy, born from the use of radar in wartime.

Exercise and massage developed, in many respects, along very similar lines. These were the two forms of treatment which dealt directly with the body itself--they were forms of active manipulation of the body, either by the patient himself or by another person. In Greek times, both were a part of a system for developing and maintaining



a beautiful body, but until the eighteenth and nineteenth century, there were no scientific foundations for either. The rocking horse of Quellmaltz was an early invention, attempting scientific use of exercise in therapeutics. At approximately the same time, the first orthopedic text, "Orthopaedia" by Nicolas Andry, was written. These were the first attempts after the Middle Ages that were of any major importance in the promotion of the scientific aspects of the field of mechanotherapy, or exercise and massage.

Massage was given its standing as a true science by Metzger and Wiesbaden. It is from their time, approximately the same time as Per Henrik Ling, or a little later, that massage became a medically acceptable practice. Weir Mitchell and Dr. Kellogg were the leading exponents of massage in this country.

Exercise as a recognized therapeutic agent had long been known, but until Johann F. Gutsmuth gave some order to exercise in his gymnastics, they had no real scientific claims. The German gymnastics of Jahn had some therapeutic value, but it was Ling's Swedish gymnastics with their free movements that formed the real foundation for the use of exercise in therapeutics, and consequently, physical therapy. It is upon his medical gymnastics that almost all exercises used in physical therapy are based. Later, Gustav Zander attempted to improve on the Ling system by devising machines which could be used for active and passive exercises of the body. The use of the majority of these machines, did not last, however, for they attempted to remove the necessary human element needed in carrying out the exercises--the gymnast. R. Tait McKenzie improved the Zander system but nothing



has ever been able to replace the therapist in therapeutic value. Some other men who improved and/or added to the value of therapeutic exercise and massage were Dr. Charles E. Beevor, who developed special methods of studying normal and disordered action of muscles; Weir Mitchell, who introduced the "rest cure" for treatment of nervous diseases; and, Just Lucas-Chapionniere, who promoted the use of massage and exercise in treating conditions originating from injuries.

The first department of physical therapy was organized at Guy's Hospital in London, and was an electrical department. After this more departments were set up, most of them in hospitals or clinics, or privately with medical affiliations. The First World War caused a tremendous increase in the need for physical therapy, and, especially in the United States, the establishment of physical therapy departments was rapid. Occupational therapy was born and made even more practical use of therapeutic exercise by devising means by which some useful occupation might be done and supply needed therapy at the same time. More than ever before, the need for trained personnel was felt.

Physical therapy became a field which required specially trained persons to prescribe and to execute the required therapy. The physician who prescribes is today a trained specialist in orthopedics and physical medicine. He must know and understand the use of all aspects of physical therapeutics from hydrotherapy to massage and exercise, plus all the other phases of medicine that any trained physician must know. The physical therapist, or technician, is the person who executes the doctor's orders. He or she must have special training in the manipulation of all machines used, in the proper execution of

massage and exercise, and in the handling of patients with any number of disorders requiring therapeutic treatment. Trained physical therapists are presently in great demand, and more and more schools and special training clinics are establishing programs for training physical therapists. Because of the close affiliation of physical therapy to medicine, many of these schools are a department of a medical school.

In physical therapy, therapeutic exercises, or medical gymnastics, are important wherever there is any abnormal functioning of an organ or organs of the body, whether the cause be disease, trauma, or deformity. No matter what the cause, the chief reason for poor functioning of the organs is generally a result of muscular inactivity and/or habitual poor posture, causing bad body mechanics. According to Richard Kovacs, (12:245) therapeutic exercises are either general, in which the whole organism is affected, or they are special, where a specific organ is affected. The exercises are grouped, as by Ling, into active, passive, resistive, and assistive divisions. However, Kovacs (12:245) places the resistive and assistive divisions under duplicated active exercises, probably because they involve some active participation by the patient, whereas Ling saw active exercises as those done by the patient alone, and resistive and assistive exercises as those involving two people and therefore, in a separate category.

Since the exercises used in physical therapy are used for treating such a wide variety of physical problems, only a few that are directly related to those found in medical gymnastics and used in corrective physical education will be discussed. This is for two reasons: (1) for comparison, and (2) because so many of the exercises used for treatment

of the more complicated diseases and injuries have been modified or enlarged to meet the needs of the specific disabilities, even though they are founded on the same basic exercises and principles of Ling medical gymnastics.

Kovacs (12:247, 252-253, 258) gives a brief description of a number of the exercises used in physical therapy.

1. Bed exercise--active--lying. Lie on back, bend knees and stretch up the arms as far as possible to touch the top of the bed. Pull up the rectum, abdomen, and chest. Make a fist and bring to the shoulder, pressing the elbows into the ribs. Then relax. Take a long breath and let go quickly. Be sure that the chest is kept high.

2. For abdominal wall and lumbar lordosis--active--lying. Correct the initial position on the back. Flex the knees and bring both of them up over the chest. Return to original position slowly. This may then be done in a sitting position when mastered lying down. It is an initial body mechanics exercise before corrective exercises are begun. The same exercise in corrective exercises requires that the patient bring the knees to the chest, relax, inhale, exhale, and lower the legs slowly.

3. Sprains--heat and massage at first, then movement of distal joints by passive exercise until the pain has gone, then gradual resistive and active exercises.

It is evident that there is a very close relationship among the exercises used in medical gymnastics, corrective physical education, and physical therapy. All the exercises are, generally, from the same source--Per Henrik Ling. Even those which may be derived from

some other system, as the German or Danish, have common founding principles with the Ling system. Almost all modern gymnastics have as their first organizer, GutsMuth. From GutsMuth's early ideas developed the Jahn German gymnastics, and the GutsMuth-Nachtegall Danish gymnastics, and the Ling Swedish gymnastics. From the Ling Swedish gymnastics, medical gymnastics were derived. And from medical gymnastics come corrective physical education and therapeutic exercises used in physical therapy. Also from Ling's medical gymnastics came the first scientific and truly therapeutic use of massage.

All three, medical gymnastics, corrective physical education, and physical therapy, have a common purpose--to develop as healthy and sound a body as possible through exercise and education of the individual in the value of exercise, whether it be for maintaining a sound body or for building one. None of the three are interested in developing great, or unusual, physical power, but desire strength for everyday activity and general good health. They all strive to correct defects, to rebuild lost or poor muscle function, and generally to improve the body mechanics of an individual as much as possible. All require a good knowledge of anatomy, physiology, and kinesiology, as well as a basic understanding of the integrated human being, mentally, socially, economically, and physically.

In connection with the aims of each, it is hard to distinguish among the three fields utilizing exercises for therapeutics. Physical therapy deals more with the rebuilding and re-education of muscles after disease or injury; corrective physical education deals mainly with the correction of postural defects of students in the schools; and, medical



gymnastics deals with the general strengthening and correcting of the individual's body mechanics. Medical gymnastics as a field unto itself is seldom found anymore. Only in isolated private cases are medical gymnastics not a part of the school physical education program, or the hospital or the hospital's clinical physical therapy department. Therefore, a difference in the type of patient is the major distinguishing factor of the three fields. The medical gymnastics, as such, with no school or hospital affiliation other than some medically trained adviser, are taught in private gymnasiums and treat private patients who come strictly of their own accord. The medical gymnastics as used in the corrective physical education program are taught in the schools, public or private, grade or college. The patients are students of the school whose problems may have been detected by the physical educator at the school, by a doctor who recommends corrective exercises by the physical educator, or they may have been treated in a hospital or clinic by a physical therapist and need additional therapeutic treatment. There may be times when a child is under treatment by a physical therapist with the school physical educator supplementing the work of the therapist. The medical gymnastics, or therapeutic exercises, in physical therapy are administered to patients of a hospital, a clinic, or a private doctor working in affiliation with some medical establishment. These patients are, as a rule, suffering from much more serious defects than those that are the class of the corrective physical educator. Many of these patients are hospitalized for at least part of the time during which they are being treated. If not hospitalized, they are under the direct supervision of a doctor, because the field of physical therapy



is very definitely associated with the medical profession, whereas corrective physical education, although often working in close association with nurses and doctors, is not a part of the medical profession, but a part of the educational system.


Although not under the same supervision, physical education, especially correctives, and physical therapy are very stimulating to one another because of their common interest--the physical. It was physical education as found in gymnastics that was the first force behind therapeutic exercises as used in physical therapy. Many of the early physical therapists became interested in their work after training in physical education. They saw what might be done for diseased and injured persons through physical exercise. Dr. Willis S. Peck (31:16, 17, and 45) states two major reasons for the close ties between physical education and physical therapy.

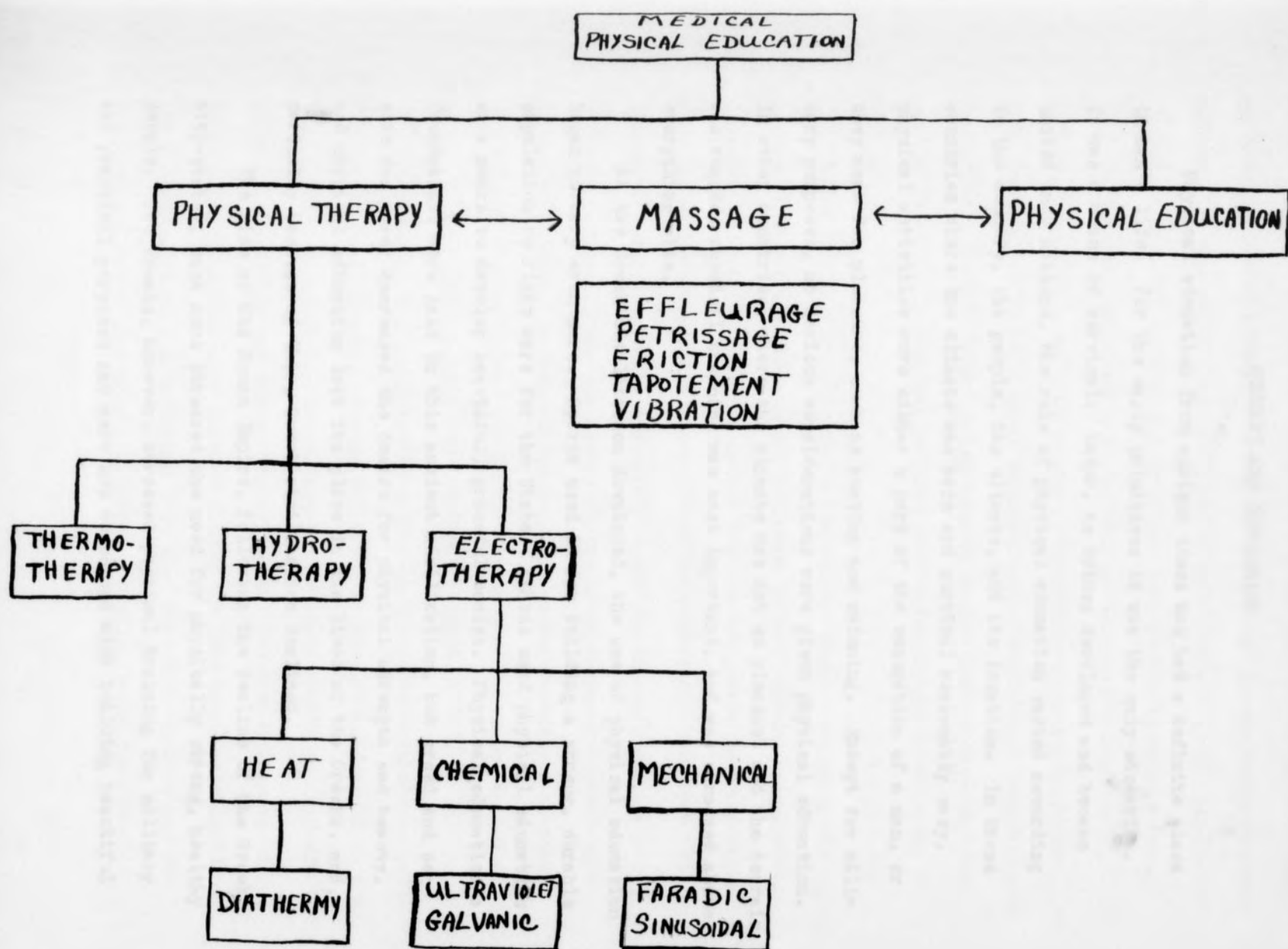
1. Many training institutions for physical therapy prefer students with degrees in physical education or nursing. These students have the necessary scientific background and, because they have had a college or nursing school education, they are more mature than the student just out of high school. The educational background of a student in physical therapy is often an indicator of the student's success in the field--the more education, the greater success.

2. Both fields have common interests in the discovery, treatment, and after-care of a crippled or physically weak child. It is often the physical education teacher who spots a defect in a child at school, seeks medical advice for treatment of the child. The physical educator may, also, work with a physical therapist in treatment of the child.

Physical education's contributions to physical therapy, through the medical gymnastics formulated by Ling, are numerous. They include almost all of the principles of therapeutic exercise, plus many other ideas and principles which have had influence in the rapid growth of the physical therapy field.

From Ling's Swedish medical gymnastics to corrective physical education and physical therapy, many an individual has been able to lead a normal existence, or one as nearly normal as circumstances would allow, without the handicaps that physical weakness, injury, and defect would have given them. The physically atypical has been given a chance to be typical because of the efforts of a man in a small nation in Scandinavia. The diagram by Lipovetz (14:2) gives a brief picture of the relationship of medical gymnastics, or medical physical education, to physical education and physical therapy.





## SUMMARY AND CONCLUSION

Physical education from ancient times has had a definite place in man's life. For the early primitives it was the only education. It was a means of survival. Later, as tribes developed and became united into nations, the role of physical education varied according to the country, its people, its climate, and its location. In those countries where the climate was warm and survival reasonably easy, physical activities were either a part of the occupation of a man, or they were for pleasure, such as hunting and swimming. Except for military purposes, no serious considerations were given physical education. In other countries, where the climate was not so pleasant and the terrain was rugged, physical training was most important, and was stressed above everything else.

As the Greek civilization developed, the use of physical education began to vary even more. Sparta used it for building a strong, durable population to fight wars for the State. Athens used physical education as a means to develop beautiful, graceful bodies. Physical education's foundations were laid in this ancient civilization, but greed and desire for power decreased the desire for physical strength and beauty, and physical education lost its place in the lives of the Greeks, and, partially because of this, Greek civilization declined.

The rise of the Roman Empire, following the decline of the Greek city-states, once more stressed the need for physically strong, healthy people. The Romans, however, stressed physical training for military and practical purposes and were not concerned with building beautiful

bodies. Unlike the Greeks, the Romans did not participate in much physical activity outside their military training. The Greeks had made games and athletic competition a major part of their festivals; the Romans did not, except for some racing of horses and the gladiatorial bouts.

As physical education grew, so did the biological sciences of anatomy, physiology, and kinesiology. Especially with the Greek-born, Roman trainer, Galen, did these sciences begin developing. From Galen's foundations, the men from the Renaissance to the present have improved and developed the biological sciences into specific and complicated fields.

After the Renaissance physical education began developing the systems which were to have great influence on our present-day physical education program. Gutsuth, in the 18th century, developed and organized a system of gymnastics and games. From his beginnings developed the systems of Jahn, Ling, and Nachteggall. Jahn, a German liberal and patriot, devised German gymnastics for building a powerful and loyal German population. Nachteggall devised his system directly from that of Gutsuth because he and the people of his country, Denmark, saw the value of physical education for everyday living.

Because of the condition of Sweden in the early nineteenth century, Per Henrik Ling, a great patriot and believer in Sweden, decided to devise a means by which his people might once again regain their former place of respect in the world. He wished to give Sweden a means of building physical strength so that they might take pride in themselves and in their nation and begin the long road back from poverty and demoralization. His system of gymnastics not only served this purpose,



but became the "backbone" of scientific therapeutic exercises to be used in physical education and physical therapy programs. From Sweden, Ling's disciples transported his Swedish gymnastics all over Europe and to the United States. Here they were adopted by physical educators to be used in departments and schools throughout most of the eastern United States, and especially in women's college physical education departments. Wellesley College became the leading exponent of Swedish gymnastics, and under the able tutelage of Amy Morris Homans, Wellesley physical education graduates took the system into schools throughout the nation. Other departments adopted the system, too, but it was Wellesley that always led in the promotion of Swedish gymnastics.

The First World War created a new interest and desire for therapeutic exercises in the schools and in medical establishments. School physical education programs enlarged their correctives programs, and departments of physical therapy were established in almost every hospital or clinic of any size. World War II increased the need for these facilities even more. They are now a prominent and necessary part of any good physical education program or any major hospital or clinic.

From the beginning of time physical exercise has played a significant role in the lives of men. Because of such leaders as GutsMuth, Jahn, Ling, Sargent, Homans, and many others, physical education is now built upon a scientific basis, and is an important factor in our educational system. Because of its scientific basis, physical education has been a major influence on both educational and medical fields. It was the physical educator, Per Henrik Ling, who fathered corrective physical education, a part of education, and therapeutic exercises used in physical therapy, a branch of medicine.

Physical education's role in the world has been significant for more than its contributions to medicine and education. In many respects, the history of physical education in a country reveals the political and economic history of that country. German gymnastics were developed as a means of rebuilding and uniting the German states. The Napoleonic Wars had created a situation that made the people and the governments of Germany want political unity and national strength. The later conservative feelings instigated by Metternich changed the views of the German government and German gymnastics as taught and organized by the Turners were abolished. The liberal revolutions of the 1830's and 40's saw German gymnastics once again become popular, for they were a program of the liberals and those wanting unity. The physical education of Germany during the two World Wars shows the strong militaristic qualities of the government during those years.

In Sweden, the early 19th century was a period of economic and political instability. The Ling system of gymnastics was devised to rebuild, physically and morally, the people of Sweden so that Sweden might once again be a nation respected by other nations and other peoples. As Sweden regained her status and became a nation noted for peace and scientific advancement, her physical education lost its military characteristics found in the early Swedish gymnastics, and the medical and educational gymnastics became the prominent parts of the system. Only when threats have been made on Sweden's neutrality has her physical education put stress on the military aspects of physical training. However, throughout Sweden's long history of neutrality, her physical education program has been strong, keeping her people

physically fit and able to offer strong resistance to any aggressor at any time.

The history of physical education in the United States reveals much of the nature of the American people. The American people have tended to enjoy the more exciting aspects of physical education--the sports and games. The more formal gymnastics have never played as important a role in the physical education program of this country although they were the first physical education program. Their use has been most prominent during times of war and in the parts of the program dealing with the prevention and correction of physical defects. The people of the United States have been more interested in activities which are less formal and offer more opportunities for simple pleasure and relaxation. They enjoy activities which offer an opportunity to "spectate" as well as participate. The American desire to win has been demonstrated prominently in the sports and games of this country, especially in recent years. Americans are noted for their love of fun, adventure, entertainment and excitement and this is dominant in their physical education program.

In France, where there has been little true stability in politics and economics since the days of Napoleon, no one system of physical education has been adopted or developed. The physical education program, like the government, has been inconsistent, changing with the whims of the French people.

A review of a country's history and of the history of physical education in that country leads to the conclusion that very often the physical education of a country tells much about the people and the

political and economic conditions of the country. In Germany physical education has stressed strength and unity, and it has been during those times when Germany was striving for strength and unity that physical education has been most prominent. In Sweden physical education has been strong throughout the years of Sweden's neutrality, for it is partially by means of physical education that the Swedes have remained strong and healthy and able to maintain their peace and prosperity. In the United States physical education has been informal, offering activities that are fun and exciting for a nation of people who love fun and excitement. The more formal activities of gymnastics have been prominent only during war years when strength was needed for fighting. In France physical education has not been stable and neither has the government.

In all the countries of the world, nationalism has created a demand and a need for education. Education of the people is the best means of creating loyalty and love for the nation and education has become the primary aim of the nations of the world to develop this love and loyalty. Physical education has been a prominent part of this educational development. In the nations where nationalism has been most prominent, physical education has played a major role in creating desires for strong national desires for fitness and health. In Germany, Sweden, the United States, and other countries this has been true.

The close ties of physical education to the biological sciences of anatomy, physiology and kinesiology, and physical education's role in the histories of many nations make it an important field in the

developing and maintaining of men's lives. Physical education, in many respects, relates the story of man, politically, socially, economically, mentally, scientifically and spiritually.

1. Adams, George F. *Physical Education*. Boston: Houghton Mifflin Co., 1913.
2. Adams, George F. *Physical Education*. New York: Paul Hoeber, Inc., 1920. (This edition revised, edited by E. S. Brundage.)
3. Adams, George F. *Physical Education*. New York: Paul Hoeber, Inc., 1927. (This edition revised, edited by E. S. Brundage.)
4. Adams, George F., and others. *Landmarks in the History of Physical Education*. Landmark Knowledge and Power, 1927.
5. Adams, George F. *Individual Development*. New York: Lee and Febiger, 1931.
6. Brundage, Edward A. *A Short History of Physical Education*. London: John Lane, 1926. (This edition revised, 1931.)
7. Adams, George F. *Physical Education*. New York: Paul Hoeber, Inc., 1931. (This edition revised, edited by E. S. Brundage.)
8. Brundage, E. A. *Physical Education as National Education*. Ithaca, New York: Cornell University Press, 1931.
9. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
10. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
11. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
12. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
13. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
14. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
15. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
16. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
17. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
18. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
19. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.
20. Brundage, E. A. *The Development of American Physical Education*. Ithaca, New York: Cornell University Press, 1931.



## BIBLIOGRAPHY

Books

1. Barrows, Isabel C. Physical Training. Boston: George H. Ellis Press, 1899.
2. Corner, George Washington. Anatomy. New York: Paul Hoeber, Inc., 1930. (Clio Medica Series, edited by E. B. Krumbhaar.)
3. Coulter, John S. Physical Therapy. New York: Paul Hoeber, Inc., 1932. (Clio Medica Series, edited by E. B. Krumbhaar.)
4. Dixon, J. G., McIntosh, P. C., and others. Landmarks in the History of Physical Education. London: Routledge and Paul, 1952.
5. Drew, Lilliam C. Individual Gymnastics. New York: Lea and Febiger, 1923.
6. Franklin, Kenneth J. A Short History of Physiology. London: John Bale, Sons, and Danielsson, Ltd., 1933.
7. Fulton, John F. Physiology. New York: Paul Hoeber, Inc., 1931. (Clio Medica Series, edited by E. B. Krumbhaar.)
8. Hartelius, T. J. Swedish Movements or Medical Gymnastics. Battle Creek, Michigan: Modern Medicine Publishing Co., 1896.
9. Hawley, Gertrude. The Kinesiology of Corrective Exercises. Philadelphia: Lea and Febiger, 1937.
10. Hinshaw, David. Sweden: Champion of Peace. New York: J. P. Putnam's Sons, 1949.
11. Johnson, Theodora. The Swedish System of Physical Education: Its Medical and General Aspects. Bristol, England: John Wright and Co., 1899.
12. Kovacs, Richard. A Manual of Physical Therapy. Philadelphia: Lea and Febiger, 1949.
13. Leonard, Fred E. and Affleck, George B. A Guide to the History of Physical Education. Philadelphia: Lea and Febiger, 1947.
14. Lipovetz, Ferd John. Corrective, Remedial, and Preventive Physical Education. Lacrosse, Wisconsin: State Teachers College, 1940.
15. Nissen, Hartvig. ABC of the Swedish System of Educational Gymnastics. Boston: Educational Publishing Co., 1892.
16. \_\_\_\_\_. Practical Massage and Corrective Exercises with Applied Anatomy. Philadelphia: F. A. Davis Co., 1929.

17. \_\_\_\_\_. Swedish Movement and Massage Treatment. Philadelphia: F. A. Davis Co., 1889.
18. Posse, Baron Nils. The Special Kinesiology of Educational Gymnastics. Boston: Lee and Shepherd Publishers, 1894.
19. \_\_\_\_\_. The Swedish System of Educational Gymnastics. Boston: Lee and Shepherd Publishers, 1890.
20. Rathbone, Josephine L. Corrective Physical Education. Philadelphia: Saunders and Co., 1954.
21. Rice, Emmett A., Hutchinson, John L. and Lee, Mabel. A Brief History of Physical Education. New York: The Ronald Press Co., 1958.
22. Sargent, Dudley A. Physical Education. Boston: Ginn and Co., 1906.
23. Schwendener, Norma. A History of Physical Education in the United States. New York: A. S. Barnes and Co., 1942.
24. Skarstrom, William. Gymnastics Kinesiology. Springfield, Mass.: American Physical Education Association, 1913.
25. Stomberg, Andrew A. A History of Sweden. New York: The MacMillan Co., 1931.
26. Svanstrom, Ragnar and Palmstierna, Carl Fredrick. A Short History of Sweden. Oxford, England: The Clarendon Press, 1934.
27. Taylor, George H. The Movement Cure. New York: Fowler and Wells Co., 1888.
28. Van Dalen, Deobold B., Mitchell, Elmer D. and Bennett, Bruce L. A World History of Physical Education. Englewood Cliffs, N. J.:
29. Wide, Anders. Handbook of Medical and Orthopedic Gymnastics. New York: Funk and Wagnalls, Co., 1943.

#### Articles

30. Braun, Genevieve L. "Kinesiology-from Aristotle to the 20th Century." Research Quarterly, XII (March, 1941), 163-173.
31. Peck, Willis S. "The Relation of Physical Therapy to Physical Education." The Journal of Health and Physical Education, III (February, 1932), 16, 17, and 45.