FUTURE LIFE INSURANCE

IV

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Chapter I

A brief survey of the growth of obstetrical knowledge should be of value in influencing the pregnant women to take advantage of the care offered by reputable obstetricians. The rapid growth made in the last few years has made childbearing a relatively safe undertaking for any woman who is interested in having a child or chidren. The hazards that women braved in undertaking the greatest adventure of any normal life have been appalling, and should not be allowed to continue in this age of increasing knowledge. Many of the fatal complications of a few years ago can now be prevented or corrected if adequate care is obtained early in the pregnancy. The present movements for better care are of interest to every parent, and should not be ignored, or unrecognized because of lack of acquaintance with them.

The history of obstetrics falls into several fairly well defined periods as presented in the Reference Handbook of Medical Sciences. These periods are as follows; the first period, all that preceded the time of Hippocrates, when observations began to be recorded and deductions made therfrom, the second period, from the time of Hippocrates the fifth centurt B.C. to the Arabian time of the ninth century A.D., the third period, from the Arabian of the ninth century to their disappearance in the twelfth century, the fourth period, the period of relative darkness from the thirteenth century to the time of Ambrose Paré in 1550, the fifth period, from the time of Paré to the general knowledge of the obstetrical forceps in the seventeenth century, the sixth period, from the general knowledge of the forceps to the use of chloroform during labor in the middle of the ninteenth century, the seventh period, from the use of chloroform to the present time, including the development and application of antiseptics to obstetrics.

As a result of his exhaustive study of labor among primitive peoples, Engelmann has come to the conclusion that the obstetrical art as it existed prior to the time of the Pharaoh, and previous to the time of the Greek civilization, is faithfully preserved among the races and peoples of the more primitive civilizations. Even if one cannot unreservedly accept that the obstetrics, as practised by certain peoples, such as the North American Indians and the negroes of Africa fifty years ago, actually represents what was practised in Egypt before the time of the earliest papyrus, or in Greece before the time of Homer, one realizes that he has gone as far as it is possible to go in giving a convincing picture of the management of childbirth in prehistoric times.

He has shown that the empirical ar natural obstetrics that still survives among tribes or peoples dependent on their own resources includes a great variety of mechanical and medicinal measures to meet the difficulties and dangers of parturition. The mechanical devices to make labor more speedy and less painful are mainly of a vis a tergo nature, such as changes of posture, swinging by the limb of a tree, powerful massage, simple expression, either by the encirding arms of an assistant or the patient's hand pressing on her abdomen.

In the Jackson Lecture, "The Makings of Obstetrics", Felix Meyer writes that"more than fifty years ago Mr. Robert W. Felkin, F.R.S.E., F.R.G.S. who had two years medical study, contributed a paper to the Edinburgh Obstetrical Society on his experiences for more than three years among the natives of Africa generally, and Central Africa especially, with reference to their childbirth practise. In it he gives a description of as abdominal or Caesarian section operation which was performed by the natives. It is included in full.

"So far as I know Uganda is the only country in Central Africa where abdominal section is practised with the hope of saving both the mother and child. The operation is performed by men, and is sometimes successful: at any rate, one case came under my observation in which both survived. It was performed in 1879 at Kahura.

The patient was a fine healthy looking women of about twenty years of age. This was her first pregnancy. I was not permitted to examine her, and only entered the hut just as the operation was about to begin. The woman lay upon an inclined bed, the head of which was placed against the side of the hut. She was liberally supplied with banana wine, and was in a state of semi-intoxication. She was perfectly naked, a band of mbugu or bark cloth fastened her thorax to the bed, and another band of cloth fastened down her thighs, and a man held her ankles. Another man, standing on her right side, steadied her abdomen. The operator stood, as I entered the hut, on her left side, holding his knife aloft with his right hand, and muttering an incantation. This being done, he washed his hands and the patient's abdomen, first with banana wine and then with water. Then, having uttered a shrill cry, which was taken up by a small crowd assembled outside the hut, he proceeded to make a rapid cut in the middle line, commencing a little above the pubes, and ending just below the umbilicus. The whole abdominal wall and part of the uterine wall were severed by this incision, and the licor amnii escaped; a few bleeding points were touched with a red hot iron by an assistant.

The operator next rapidly finished the incision in the uterine wall, his assistant held the abdominal walls apart with both hands, and as soon as the uterine wall was divided he hooked it up also with two fingers. The child was next rapidly removed, and given to another assistant after the cord had been cut, and then the operator, dropping his knife, seized the contracting uterus with both hands, and gave it a squeeze or two. He next put his right hand into the uterine

cavity through the incision, and with two or three fingers dilated the cervix uteri from within outwards. He then cleared the uterus of clots and the placenta which had by this time become detached, removing it through the abdominal wound. His assistants endeavored, but not very successfully, to prevent the escape of the intestines through the wound. The red-hot iron was next used to check some further hemorrhage from the abdominal wound. But I noticed that it was very sparingly applied. All this time the chief "surgeon" was keeping up firm pressure on the uterus, which he continued to do till it was firmly contracted. No sutures were put into the uterine wall. The assistant who had held the abdominal walls now slipped his hands to each extremity of the wound, and a porous grass mat was placed over the wound and secured there. The bands which fastened the woman down were cut, and she was gently turned to the edge of the bed, and then over into the arms of assistants, so that the fluid in the abdominal cavity could drain away on the floor. She was then replaced in her former position, and the mat having been removed, the edges of the wound (that is, the peritoneum) were brought into close apposition, seven iron spikes, well polished, like acupressure needles, being used for the purpose, and fastened by string made from bark cloth. A paste prepared by chewing two different roots and spitting the pulp into a bowl was then thickly plastered over the wound, a banana leaf warmed over the fire being placed on top of that, and, finally, a firm bandage of mbugu cloth completed the operation.

Until the pins were placed in position the patient had uttered no cry, and an hour after the operation she appeared to be quite comfortable. Her temperature, as far as I know, never rose above 99 degrees Farenheit, except on the second night after the operation, when it was one hundred-one degrees Farenheit, her pulse being one hudred-eight"[1]

Midwifery has been recognized as far back as history is known, and may have been practised in prehistoric times. Its first beginnings are unknown, but abnormalities in labor and delivery were recognized more than four thousand years ago. Birth of the twins, Pharez, and Zarah, was noted in Genesis and it is the first record of spontaneous version, or turning in the womb, ever given, " And it came to pass in the time of h r travail that twins were in her womb, one put out his hand and the midwife took and bound upon his hand a scarlet thread saying, This came out first. And it came to pass as he drew back his hand that his brother came out, and she said, How hast thou broken forth? this breech be upon thee; therefore his name was called Pharez. And after came his brother that had the scarlet thredd upon hie hand, and his name was called Zarah."[3]

The Egyptians of four thousand years ago were highly cultured and lived in cities. This change led to structural changes in the pelvis, with the resulting difficulty of delivery. The Jewish women had a much easier delivery. A college existed at Sais in which women were taught the profession of midwifery, and these in turn gave instruction in gynecology to the physicians.

The Bible also cites some other cases of difficult labor. For example, the birth of Esau and Jacob in Genesis xxv 24-26. And the labor of Rachel who died at the birth of Benjamin. Mention is made in the Bible and by some Greek writers of the stool or Obstetrical chair, and it appears to be of great antiquity. The chair is still used by some races of the East. The Law of Moses prescribed for the purification of women after lanor, and the Talmud recognized the period of pregnancy as two hundred seventy to two hundred seventy-three days and that pregnancy was not detectable prior to the fourth month after the onset of the pregnancy. It anticipated the error of Hippocrates that the eight months child id not viable, that is, not capable of maintaining life independently, and declared that

the child floated in the amniotic sac, or bag of membranes surrounding tha child, folded up like a scroll. It also shows that the ancient Hebrews had some knowledge of evesceration, that is, the removal of the abdominal cavity of the baby to facilitate delivery, caesarian section, or the removal of the baby through the abdominal wall, and version, or turning of the baby in the uterus to correct an abnormal position of the foetus.

In addition to the midwives the priests were the most educated, and they helped at difficult labors, probably by manual or instrumental procedures. Experience in the case of death of the parturient made them familiar with the contents of the interior of the body.

Little is known of the obstetrical practises of ancient India, except that they were of a very primitive character. Some knowledge of the foetus inutero was probably gained from animals. They thought the embryo fastened itself to the side of the womb in the first month, was egg-shaped in the second month, the head and trunk took distinct form in the fifth month, became definite in the sixth and seventh months, the child became uneasy and restless in the eighth month, and was born between tha ninth and twelfth months. Enough observation had been made until they could recognize the normal in that the head should always come for th with the mouth to the mother's spine in prayerand facing earth. It was thought that there was some knowledge of extraction by podalic version, that is, the breech or buttocks of the child are brought to the inlet, of caesarian section upon the dead mother, and of embriotomy, that is, the destruction of the foetus in the uterus, and of craniotomy, an operation of cutting or breaking down of the foetal head, upon the dead child. Obstetrical knowledge in this country was enough to recognize the following presentations of the foot, the breech, that is the buttocks of the child, back, side, and breast, the latter with prolapse of the arm, and even to devise artificial mehtods to remedy them.

Even records and traditions of the Aztecs show that malpositions of the foetus were observed after the seventh month, and efforts were made to correct them by kneading the abdomen of the mother or by grasping her by the legs and shaking her; a heroic treatment, but it must have been successful in a certain number of cases to have been recorded. It is not surprizing that a people who were advanced as much as they, should make an effort to correct these abnormalities after recognizing them.

The ancient Japanese practised friction of the abdomen to facilitate labor, and also external version. Existence of pregnancy was detected by means of certain signs in connection with the pulse, the abdomen, and the breasts.

The ancient Greeks had the most fully recorded observations on obstetrics. During the time of Hippocrates, commonly called the father of medicine, or during the fifth century B.C., the art of midwifery was well recognized. It is said that Hippocrates was one. The priests of Ascepius accumulated a fund of knowledge of medicine, including obstetrics, and Hippocrates is indebted to them. He was an acute observer and made abundant contributions to the permanent records fromehis own experience and reasoning. It could well be said with Socrates that he was a midwife and helped nature give birth to ideas. Midwives attended to all wants of the parturient women, encouraged labor pains by massage of the abdomen, by sternatatories which provoke sneezing, by the patient walking about, and even by shaking her. They performed abortions and had private asylums for the treatment of diseases of the female genitals. In Aristotles time these were forbidden by a law which was not repealed until 285 B.C. Men were called on only for destructive operations or for Caesarian section upon the dead.

Hippocrates taught that at seven months the child was viable, but

not at eight months. This belief was handed down almost to the present, also that the head presentationswas the only normal one and advised cephlic version. Although these ideas demonstrated the general lack of knowledge, it also showed that men had begun to think of ways of overcoming variations from the normal; therfore it was a most important matter. He and his followers recommended manual expression of the retained placenta, and gave rules for the performance of destructive operations, such as embryotomy, craniotomy, perforation, extraction with with the hook, and amputation of the limbs.

The Romans added nothing of importance to the knowledge accumulating around obstetrical practises. Midwives attended at deliveries, treated diseases of the genitals, and were consulted by the authorities on obstetrical matters with a legal bearing. Caesarian section was done on all women who died undelivered from the time of Numa Pompilius.

From the fourth century A.D. very little was added to obstetrical knowledge. Then came Galen, whose profuse medical writings were based upon those of Hippocrates. These became the standard for medical literature for the succeeding one thousand years. This added nothing to obstetrical knowledge for Galen practised neither obstetrics nor surgery. Milk in the breasts was considered due to the pressure of the uterus on the abdominal vessels.

In addition to Galen, a group of men arose during the first seven centuries A.D. of the Christian era. Obstetrica made much progress, particularly in the domain of destructive obstetrics. Celsus,25B.C. to 50 A.D., described the method of extraction with a hook, decapitation, and expression of the dead foetus. Also he described two methods of version, one for the dead foetus, and one for the foetus in transverse presentation,when the baby is lying with its side to the mouth of the uterus. Four kinds of presentations were recognized by him; the head as the only normal one, the thigh, the feet, and the transverse. Soranus of Ephesus, 100 A.D. was the most distinguished

obstetrical writer of antiquity. His "Recommdations", whether original or not, showed a great advance in information in obstetrics, gynecology, and pediatrics since the time of Celsus. His is the first recorded book of instructions for midwives, and he made the following observations: artificial abortions at the third month may result in tetanus or the commonly known lock-jaw, inversion or turning wrong side out of the uterus may follow hasty or faulty delivery of the placenta, premature rupture of the membranes or bag of waters is usually a sign of a long and difficult labor, ~~and~~ he enumerated the signs of pregnancy and by percusion, a light, quick tapping, as of the finger-tips on the chest or abdomen, for determining, by resonance, the density of the organ beneath, differentiated a uterine mole and other tumors from pregnancy. He made use of the knee-elbow position in labor, and practised cephalic version for living children, and was the first to recommend the latter procedure and to demonstrate a delivery other than by the head was feasible and sometimes desirable. He established a firm basis for obstetrics and his influence was felt and prolonged for more than one hundred years by Rufus and Moschion. Rufus' writings were not extensive, but were apparently the first to describe the Fallopian tubes leading from the uterus, and to note their importance. Moschion, 220 A.D.? wrote a book of instruction for midwives, only parts of which have been preserved, and it is mostly a repetition of Soranus. In it he taught that blood discharged if menstruation had continued, is used to nourish the foetus. He also described the membranes, and gave a series of pictures derived from Soranus illustrating the positions of the foetus in utero. In instructing midwives, he refers to the obstetrical chair, recommends dilatation of the mouth of the uterus with the fingers, rupture of the membranes, and gave instructions in regard to the pressure which may be exerted on the abdomen, also in regard to the removal of the placenta by hand. He advised them to tie the

cord with two ligatures, and to cut between them with a knife or s scissoors. Also he gave many rules for the care of the new-born baby, and he considered the period of lactation as eighteen months.

Between the third and sixth centuries very little was contributed. Herophilus of Chalcedon described changes of the cervix or mouth of the uterus during labor. Aëtius, 501-575, gave a new light in the literary gloom of two hundred years. He collected all that had been written on the subject of obstetrics and gave a vast amount of additional and important information, which until then had been inaccessible. In his description of the anatomy of the uterus and its functions, he followed Moschion and Rufus, who had in turn followed Soranus. He discussed menstruation, puberty, signs of pregnancy, and ways of determining sex before birth. Also he described foetal membranes, and cord, the development of the embryo, the foetus at maturity, the process of rupture of the membranes, and the phenomenon of labor. He recognized the following as obstacles to labor: a narrow pelvis, oblicuity of the pelvic position, and polypi or tumors; also he called attention to ankylosis or stiffening of the pelvic bones and distention of the bladder and rectum. He recognized that the dystocia, or painful, slow, or difficult labor, may be due to either the child or the mother. Reference was made to the crotchet, a curved hook-like instrument for the extraction of the foetus after a craniotomy, which is not used now. He also referred to artificial delivery by means of two crotchets, thus anticipating the principle and use of forceps. He advised version for bad cases of head presentation, and gave directions and indications for the amputation of the head or extremities, for the extraction of which he recommended the use of a sharp hook. His work was most comprehensive and held the exalted position which that of Soranus had held four hundred years previously.

Aspasia followed with another book on obstetrics an gynecology which had considerable scope. It included advice to pregnant women

as to hygiene, directions for artificial abortion and prevention of conception, the use pessaries to support the uterus. Difficulty in labor was regarded as the result of deviations of the uterus, tumors of the cervix, inflammation, premature loss of the amniotic fluid, abscess, obesity, failure of the pubic bones to separate, large size of the foetus, twin births, and deficiency of the foetal activities. Different presentations were noted, and all except the vertical, or head, presentation was declared abnormal. He also gave procedures and indications for cephalic and podalic version. The accoucheur was warned to be cautious and not too hasty, and was given rules for the removal of the placenta, for the use of the crotchet, and for destructive operations in general.

Many facts which we now consider fundamental were known at this time. Paul of Aeginia practised in Egypt and Asia Minor in the seventh century, and wrote his works comprehending all medical science, much of it being gathered from his own experience. In obstetrics he followed the ideas of Aëtius. Also he wrote a chapter on difficulties in labor, and on diseases peculiar to women. Like earlier writers, he described the use of the crotchet, podalic version and other destructive operations.

There followed a period of sterility and darkness until the Arabs picked up the flickering sword in the ninth century. They did not ignore obstetrics, but made no additions except the use of medicine during pregnancy and parturition. Operative obstetrics was taught only to the midwives. Among their peculiar claims was t their ability to predict pregnancy and the birth of a son from an examination of the urine. During later stages of Arabian influence there were a number of well known gynecologists and obstetricians. Avicenna of Ispahan adhered to the obstetrical errors of the early Greeks, and in particular to the one that the vertical was the only normal presentation. He advised cephalic version if necessary, or if impractical, the use of the fillet, a loop of fiber used to

make traction; if that failed, he advised the extraction of the head with forceps, the form of which is not known, but was prabably destructive. If this failed, he advised the use of the perforator and cretchet. Albucasis, twelfth century, described two forceps with teeth on the inner surface, one curved, and on straight. These were highly disfiguring if not completely fatal to the infant. Schools were established at Salerno, and later at Bologna and Paris before the downfall of the Arabs.

The thirteenth and fourteenth centuries are almost blank, only an unimportant work on reproduction and birth being written in the thirteenth century.

The study of anatomy was revived in this period by De Luzzi, and that of surgery by Guy de Chauliac. In 1295, Lanfranchi wrote a treatise on the dilatation of the mouth of the uterus, and about the same time Niclas Bertucci, first professor of obstetrics in Bologna, advised artificial rupture of the membranes in labor.

In the fifteenth century the Renaissance had begun, printing was discovered, universities at Prague, Rostock, Leipsic, and Griefswald were founded, and the Italian gynecologists Petrius Beirat, 1560, and Gabriel de Zerbes, 1490, were at work.

In 1513, Röslin, wrote his"Garden of Roses for Pregnant Women and Midwives" This was mainly a compilation from Soranus of Ephaesus, as filtered through the manuscript codices of Moschion, and was still the only textbook in the field after the lapse of fourteen centuries. Three first editions were issued which were interesting for their cusint cuts, and the revival of podalic version as it was originally described by Soranus.

In 1554, Rueff of Zürich published a book for midwives. In it he followed many of the principles to be found in Röslin's book. Like the Arabs, he advocated the use of medicine to hasten labor, which he thought was started by fetal movements. In delayed labor,

he reccommended dilatation of the genital tract with the fingers, or instruments, and that the placenta be removed by hand if not naturally expelled. He gave rules for the management of labor when the position was faulty, and for the delivery of monsters. He described a long smooth duck-bill forceps for the extraction of the head, because of this, he is regarded by Crantz, Stein, and others as the inventor of the forceps. These were only destructive however, and a modification of the former ones.

The worst phase of the Renaissance medical practise was that of obstetrics. Very little is known of the obstetrical practises of the Middle Ages, but the extent of the degradation may be judged by what happened in this period. In normal labor the woman had an even chance, if she did not succumb to eclampsia or puerperal fever. In difficult labor she was butchered to death by a Sarey Gamp, or by one of the "vagabond surgeons". As a rule only the midwives attended lying-in women. In 1550, a law was passed in Germany to prevent shepherds and herdsmen from attending obstetrical cases. In the Renaissance, as in the Middle Ages the lying in room was crowded with people. Obstetrical abuses were remedied to some extent by city ordinances governing midwives, in Rattisbon, 1555, Frankfort on the Main, by Adam Lonicerus, 1573, Passau, 1595.

Infants were breast fed, wet nursing grew, and baby farming became a notorious evil. The high rate of infant mortality was due to the low staus of public and personal hygiene, which was held in less regard then in the Middle Ages. The cities had no drainage, the floors of the dwelling were strewn with rushes, and their cesspools were sinks of filth and infection.

The first clinical instruction was given in the sixteenth century in Padua. In 1518, Lanfranc, English court physician to Henry the VIII, obtained a patent for the Royal College of Physicians, and from this obstetrics became of some importance in England.

In 1565 Raynolds wrote the first English work on obstetrics, "The Byrthe of Mankinde", which was a translation from High Dutch work of Eudearius Radian. This underwent further translation into Dutch, French, Spanish, Latin and other languages. In it the error as old as Hippocrates is repeated, which had been alternately renewed and discarded, that the head presentation was the only normal one. Also he erred in stating that normally the face and foreparts of the child would face the for parts of the mother.

The next period opened with much more light. Ambrose Paré, 1510 - 1590, was an obstrician as well as a great surgeon. He is honored by Smellie as "the famous restorer and improver of Midwifery". Anatomists had developed the science of the human anatomy, and incidently the anatomy and physiology of the pelvis as never before. Vesalius rectified the errors of Galen and Hippocrates which were two thousand tears old. Comparative studies were made by him, and he described the uterus, its its neck, also the changes that take place during pregnancy. His successor at Padua defined three positions of the foetus, head below, head above, and the body transverse. Others to add to the accumulating knowlegde were Fallopius and Eustachius, the latter illustrated his discoveries with plates and pictures. The idea and purpose of operative midwifery, now for the first time became conservative instead of destructive. Paré admitted that he did not know the normal position of the child in labor, and reintroduced podalic version as a conservative method, with a craniotomy substituted if absolutely necessary. In his writings he advocated Caesarian section upon the living. In 1551 the operation was done by Jacob Nufer, a hog-gelder, who had sectioned his wife as he would a hog, and the operation was successful. Also Paré detailed the management of labor, prescribed

the use of sternutatories, to provoke sneezing, when labor was delayed, he reccommended for the first time that the parturient be laid across the bed in delivery, described methods of procedure for delivery of dead children by craniotomy or the crotchet. He was the first to mention the serious nature of cicatrices or scars of the uterus during labor, the influence of various positions of the foetus upon the progress of labor, and the deleterious effect of uterine inertia and premature loss of the amniotic fluid. He also gave instruction to midwives concerning the care of the new born. The School of Paris with which Paré was associated was foremost in the world and center of light and learning. Following him surgeons now practised obstetrics as something not beneath them.

Roussett in this century wrote on Caesarian section and reported fifteen successful operations. It was difficult to get the obstetrical art out of the hands of midwives into the hands of men. They could not learn to deliver successfully without experience, which was doubly hard to obtain because of the prudery of the women. Free use of podalic version was a step in the right direction, but sometimes this was insufficient without the aid of the fillet or crotchet. A workable forcep was needed, the germ of the instrument was present in the crotchet with and without teeth, but it took a long time to convert it.

The true obstetrical forceps was devised in the latter part of the sixteenth and beginning of the seventeenth centuries by a member of the Chamberlen family. This invention was preserved as a family secret for four generations, and did not become generally known until the early part of the eighteenth century. Version was the only method known for artificial delivery of an unmutilated child, for when a natural delivery was impossible resort was made to hooks and crotchets which usually killed the baby. A never failing result following the use of instruments was the death of the

baby and frequently of the mother, this tended to bring obstetrics into disrepute. William Chamberlen, the founder of the family and a French physician, fled as a refugee from Huegenot persecution to Southamton in 1569. He died in 1596, leaving a large family. Two sons, both named Peter, known as elder and younger, studied medicine and settled in London. They were soon successful, and devoted a large part of their attention to midwifery at which they were very profisient. An attempt to control the instruction of midwives was made by the brothers, in justification of this, they claimed they could successfully deliver patients after all others had failed.

Peter the younger died in 1626, the elder in1663. The latter had no sons, the former had several, one was named Peter, and to distinguish him from his father and uncle, was called Dr. Peter. The other two sons did not possess that title. Dr. Peter was well educated, he had studied at Cambridge, Heidelburg, and at Padua, on his return to London he was elected a Fellow of the Royal College of Physicians. He was very successful, and he also tried to monopolize the control of midwives. His pretentions were set aside by the authorities, and his attempt gave rise to pamphlets concerning the morality of women in labor being attended by men. These pamphlets were answered by him in one entitled "A Voice in Ramah, or the Cry of Women and Children as Echoed Forth in the Compassions of Peter Chamberlen". Dr. Peter was a man of ability and some virtues of the religious enthusiast combined with many devious qualities of a quack. He died at Woodham, Mortimer Hall, Essex, in 1683. This estate remained in the family until well into the next century. This member of the Chamberlen family was formerly believed to be the inventor of the forceps, but this has been shown to be incorrect. He left a large family, Hugh, Paul, & John became physicians with special attention given to midwifery.

Hugh, 1630-1706, was the modt important, and was a man of considerable abilitty with a practical interest in politics. He was forced to leave England, and while inParis, 1673, he attempted to sell the family secret to Mauriceau for 10,000 livres, claiming that he could deliver the most difficult case in a few minutes. However he was unable to deliver a rachitic dwarf, confided to him by Mauriceau, after several hours of strenuous effort. Nevertheless he maintained friendly relations with Mauriceau, and returned to England where he translated his book. In his book he refers to the forceps as follows; "My father, brothers, and myself, though none other in Eurppe that I know, have by God's blessing and our own industry attained to and long practised a way to deliver women in this case without prejudice to them or their infants". Some years later he went to Holland and sold the secret to Roonhuysen. Shortly afterwards the Medico-Pharmaceutical College of Amsterdam was given the sole privilege of licensing physician to practise in Holland, to each under a pledge of secrecy, was sold Chamberlen's invention for a large sum. This continued for a number of years, until Vischer and Van der Poll purchased it and made it public. It was then found that the devise consisted of only one blade. Whether that was all that Chamberlen sold or whether the Medico-Pharmaceutical College swindled the purchasers is not known.

A considerable family was left by Dr. Hugh, one son, Hugh 1664-1728, practised medicine. He was a highly educated, respected, philanthropic physician. He numbered among his clients the best families of England. He was an intimate friend of the Duke of Buckingham. In his later years he allowed the secret to leak out and it was soon in general use by all the Obstetricians. For more than one hundred years it was believed that the forceps w as in - vented by Dr. Peter Chamberlen, but in 1813, Mrs. Kembell, the housekeeper of a rich brewer who purchased Dr, Peter Chamberlen's

house in the country, found in the garret a trunk with numerous letters and instruments. Among the latter were four pairs of forceps with several levers and fillets. It was evident by drawings that the forceps were in different stages of development; one pair was hardlypractical for use on a living woman, the other three were useful. "Aveling, who has carefully investigated the matter, believes that the three pairs of available forceps were used respectively by the three Peters, and that in all probability the first was devised by the elder Peter, son of the original William. Probablity is lent to this view by the fact that Dr. Peter, an one occasion, at least, spoke of the invention of his uncle. Sanger and Buden, who have also investigated the subject, are inclined to the same belief".[4]

Forceps came into general use in England during the lifetime of Hugh Chamberlen, the Younger. In 1723, Palfyn, a physician of Ghent, exhibited before the Paris Academy of Medicine, a forcep which he designated as "mains de fer". These were crude in shape and did not articulate. In the following discussion De la Motte stated that if by chance any one should happen to invent an instrument which could be so used, and kept it secret for his own profit, he deserved to be exposed upon a barren rock and have his vitals plucked out by vultures, little knowing thatat the time that he spoke such an instrument had been in the possession of the Chamberlen family for nearly one hundred years.

The Chamberlen forceps, short, straight, with a cephalic curve only, is perpetuates in the short or low forceps of today. It was used with little modification until the middle of the eighteenth century when Levret, 1747, and Smellie, 1751, quite independently added a pelvic curve , and increased the length.

Levret's were longer and had more decided pelvic curve. The long forceps of today descended from these, alsothe long French ones, and the Simpson Forceps from Smellie's. By 1798, Mulder was able to give illustrations of nearly one hundred varieties in the Atlas. Considering all the work that has been done on them, there is surprisingly little advancement made over the instruments of Levret and Smellie, until Tarnier,1877, clearly enunciated the principle of axis traction which has revolutionized the present ideas upon forceps.

To go back and pick up the thread of this history, in the seventeenth century the man-midwife had become popular in France. Mauriceau, 1637-1709, A French physician practising in Paris, was in some respects the leading representative of obstetrical knowledge of the time. His work on the diseases of pregnant and puerperal women,1668, illustrated with exquisite copper plates, was a sort of canon of art in its time. It gave a good account of the conduct of a normal labor, the employment of version, and the management of placenta praevia. He was the first to correct the ancient view that the pelvic bones are separated in normal labor, that the amniotic fluid is an accumulation of menstrual blood or milk. Also he was the first to refer to tubal pregnancies, difficult labor as the result of involvement of the umbilical cord, and epidemic puerperal fever. With regard to the position of the child in the uterus, he believed that from the seventh to the eighth month it was in the center of the uterus with the head toward the fundus, or top of the uterus and looking forward. The weight of the head and upper portion of the bodynow relatively greater than the lower, caused the head to drop forward with the face toward the sacrum. He did not believe that the movements of the child aided its delivery, but that the expulsive force was the contraction of the uterus and abdominal

muscles. He had an indistinct idea of the process of rotation, or turning of the child in the birth canal, remarking that in footling cases the face should look toward the sacrum and should be turned if necessary.

De La Motte gave rules for the performance of version in the narrow pelvis.

At about this same time there were some very efficient women midwives such as Louise Bourgeois, who attended Marie de Medici through her six labors, and Justine Siegemundin, "Court Midwife to the Electorate of Brandenburg" whose treatise of 1690 met with great opposition because it was written in the German language. Jane Sharp, who is perhaps a mythical character, whose "Complete Midwife's Companion" was first published in London 1671.

Other man Midwives were Paul Portal of Montpelier, who wrote a treatise in 1685, in which he taught that version can be done by one foot, and that face presentations usually run a normal course. Hendrik van Deventer, 1651-1724, the father of modern midwifery, in his book with its interesting plates, gave the first accurate description of the pelvis and its deformities, and the effect of the latter in complicating labor. Hendrik van Roonhuyse was the champion of Caesarian section. He performed this operation with success several times, and wrote the first work on operative gynecology in the modern sense. Also he described cases of extra-uterine pregnancy, and rupture of the uterus.

In England, Willis defined puerperal fever. Needham wrote on the nourishment of the foetus by the placental blood and on the relations between mother, foetus and placenta, which was an important addition to the physiology of pregnancy.

Some of the trained obstetricians to practise midwifery were, Peter Chamberlen, who was called on to attend Queen Henrietta Maria in a miscarriage, in 1628. In 1663, le Sieur Boucher was called to

attend La Vallière, mistress of the Grande Monarque in her first confinement and again in 1670. Julian Clément attended Mme. de Montespan at the birth of the Duc de Maine, afterwards delivering the Dauphine, 1682. For this he received the name of Accoucheur. From this time male- midwifery became the fashion. As soon as women were allowed examinations to be made as well as the delivery, inductive knowledge of the complex details began to make rapid strides.

Works on obstetrics became numerous. Mesnard, French, 1743, wrote the first work since the forceps had come into general use. Most comprehensive publication as yet in French. In it he described the anatomy and diseases of the pelvic organs, conception, the hygiene of pregnancy, and accouchement. Delivery was described as possible with the patient sitting on the lap of another person, lying upon the back, upon the side, and in the lithotomy position, that is, the patient lies on the back, with the legs and thighs well flexed, the knees widely separated, and the hips well over the table's edge. Various complications during labor were noted, and perforation was considered inadvisable unless the child was dead or dying. He was the first to reccommend the application of forceps to the after coming head after version had been performed, and a delivery by breech was pronounced normal and proper. He considered a Caesarian section was indicated only when the head of the child was too large or the pelvis was very narrow. Puzos was the first to advise external pressure upon the womb in the treatment of post-partum hemorrhage. His book was published in1759, six years after his death. Other measures were advised for the protection of the perineum during labor, bimanual exploration, podalic version, and friction of the mouth of the uterus to bring on labor pains.

Baudelocque produced a powerful impression, although his teachings were more conservative than those of the followers of Levret.

He advocated a series of measurements of the pelvis during the pregnancy, and advanced knowledge of the mechanics of labor. He was a pronounced opponent of operative measures, especially of caeserian section, symphysiotomy, or the cutting of the pubic bones at the symphisis, and induction of premature labor.

Camper, a Dutchman, advocated symphisiotomy, but it was not performed until it was done successfully by Sigault in 1777. The German obstetricians were not as important as in the following century. Heister at Helmstadt was the first to deliver lectures on obstetrics. Seibold, 1778, performed the first symphisiotomy in Germany.

Great Britain produced many illustrive names. Manningham was both a teacher and a writer, showing pupils how to examine women, and how to extract children by use of a manikin. He studied the subject of placenta previa, and discountenanced the performance of caesarian section, because he believed it to be fatal. Like Van Deventer, he advised the depression of the coccyx as as aid in difficult labors. Fielding Ould, a Dublin obstetrician and writer, 1842, was the first to describe in detail the mechanism of labor. He taught both natural and instrumental midwifery, but was partial to version in the proper cases. Apparentally he was not favorable to the use of forceps, and rarely employed them, but he taught how they should be used. William Smeelie, 1697-1763, studied obstetrics in Paris. In 1739, he settled in London, and began to instruct students in obstetrics. For demonstration he used a leather covered manikin suppoted by actual bones; his classes were conducted in his home. William Hunter became his pupil in 1741. In 1744, Smellie introduced the use of the steel locked forceps, inl751, 1753, he introduced the curved and double curved forceps. In 1752, he wrote a book on midwifery. This wad the first book to lay down rules for the safe use of forceps and for the differenation of contracted fr m

normal pelves.by actual measurments. This was deemed worthy of the honor of a special reprint by the Sydenham Society in 1877-1878. In 1754, he compiled a s t of anatomical tables which were entirely obstetrical.

John Harvie married Smellie's niece and succeded to his lecture room in 1759. He published a pamphlet in which the advantages of e external manual expression of the placenta over traction or internal manipulation are clearly stated nearly ninety years before Credé. Edward Foster,1781, in Dublin, gradually conveyed the same idea. In 1783, William Deese, in 1817, Joseph Clarke, in 1835, Robert Collins, in 1848 A. H. McClintock and S.L. Hardy also adopted this method. Although it was not known outside Ireland, it became the established mode of procedure there, and was known as the"Dublin Method".

William Hunter, 1718-1783, became the leading obstetrician and consultant of London. His greatest work is his atlas of the pregnant uterus written in 1774. His special discovery of the "decidua reflexa" and of the separate maternal and foetal circulation in which his brother had apart is the foundation of modern knowledge of placental anatomy. He was also opposed to the use of forceps. He built an anatomy theater for the teaching of obstetrics, and made use of the manikin in his instruction. For thirty years he worked in dissection upon the pregnant uterus, producing a series of plates never excelled.

Chales White, 1773, wrote an obstetrical treatise which stands out as a pioneer work in aseptic midwifery. He became a prominent continental obstetrician.

Lucas Johann Böer, 1751-1835, the ablest German obstetrician of the time, was a pioneer of "natural obstetrics". Before this time pregnancy had been considered as a nine months disease. To Mauriseau, Portal, and MarQuest deLa Motte is due the improvement of obstetrical diagnosis by digital exploration, standardization of

of version, and its indications, the substitution of rational expectant procedures for bungling instrumentation, and the study of the contracted pelvis.

William Shippen of Philadelphia, 1736-1808, was the first public teacher of midwifery in the United States, andhe greatly advanced the cause of male midwifery there. These closing years of the eighteenth century witnessed our entrance into the family of nations, as well we the beginning of the teaching of obstetrics.

In 1797, a school was established for midwives at Maternité in Paris under Baudeloque. Many more were being established at this time. The greatest achievement of the New Vienna School was the determination of the true cause and prophylaxis or prevention of puerperal fever. During the eighteenth century Charles White enlarged on the advantages of scrupulous cleanliness.

Thomas Denman, of Great Britain, gave notice that puerperal fever was communicated by the doctors and the midwives. He also made useful contributions with his theory of normal labor and recommendations for the induction of premature labor. He described spontaneous version in cases with prolapse of the arm of the foetus.

The nineteenth century found the science and art of obstetrics well established in all parts of the civilized world. Anesthesia and antisepsis remained to be perfected. Improvement and modification of the ideas and methods which had been laborously wrought out in previous ages were taking place with increasing rapidity. This was a period of teaching, all tha nations had a pert in this advancement.

Germany reached a commanding position, chiefly owing to the wonderful development of ite universities and the great erudition and skill of its professors. This included the Austrian university at Vienna where the teaching was in German, and the obstetrical service at the Krankenhaus had constantly attracted students from all over the world. L.J.Böer was the head at the beginning of the century. About the middle of thid century Semmelweis became very

prominent. He was a Hungarian, and a pupil of Skoda and Rokitansky. In 1846 he became assistant in the first obstetrical ward of the Allgemeines Krankenhaus in Vienna. In it he noticed that students came to the first ward with unclean hands, and made examinations. The second ward had less fever , as it was devoted to the instruction of midwives, and was therefore much cleaner. He made careful study by means of of autopsies in fatal cases. In 1847, Kolletschka, Rokitansky's assistant died of a dissection wound, and Semmelweiss was present at the post mortum . He was struck by the fact that the pathological appearance was the same as puerperal fever, and so the chain of evidence was completed. He immediately instituted such measures of cleanliness, that the mortality sank from 9.92 to 3.8 per cent. The following year it fell to as low as 1.27 per cent, merely through washing their hands with Calcium Chloride Solution in connection with pregnancy and in conducting of labor.

He was a true pioneer of antisepsis in obstetrics, although Oliver Wendell Holmes antidated him by five years. his work was very superior because of his stiff fight and the fact that he refognized puerperal fever as a form of septicemia or blood poisoning. But he met with fierce opposition, however his instructors stood back of him. The orthodox obstetricians of the day, Scanzoni, Carl Braun, and other persecuted him. Disgusted, he left Vienna for Budapest where he became a professor of obstetrics at the university in 1885. While there he published his immortal treatise on "The Cause, Concept and Prophylaxis of Puerperal Fever" as well as his scathing "Open Letters to Sundry Obstetricians" in 1861. His sensitive nature was not equal to the strain of the heated conflict, and he became insane and died.

In Prague obstetrics was taught by Jungmunn, Kleinwächter, and others. These made this an important center for many years. Considerable work was being done upon the problem of the complication

presented by a distorted pelvis. Naegele perfected the work on the mechanism of labor, and organized the literature on pathology and anatomy of the pelvis by a description of the contracted pelvis.

Antiseptics and asepsis had been introduced by the time of Lister, but it did not take hold until surgeons and obstetricians both began to cleanse their hands in carbolic or bichloride of mercury. Etienne Tarnier was the first to employ carbolic solution in obstetrics on 1881. He is also known as the inventor of the well known axis traction forceps on 1877, and as the introducer of the milk diet in pregnancy.

Some important features of the pre-antiseptic period were; artificial induction of premature labor by Carl Wenzel in 1804, the use of ergot by John Stearns of Massachusetts in 1808, the establishing the contagiousness of puerperal fever by Holmes and Semmelweiss in 1847 and 1861, the first findings of albumin in the urine in connection with puerperal convulsions by John C.W.Lever of Guys Hospital in London in1843, the introduction of acombination cephalic version by Marmaduke Burr Wright of Ohio in 1854, the introduction of a combination podalic version by Braxton Hicks in 1864, in the early part of the century , two French midwives , Mme. Bowin, 1773-1841, and Mme. La Chapelle, 1769-1821, published treatises of note on obstetrics. Mme La Chapelle's contain statistical deduction from forty thousand cases, which helped establish the proper norm or canon of obstetrical procedure of the time. Many works followed this one. Morphological study of the the deformed pelvis and spine in relation to difficult labor was almost exclusively in the hands of the German s.

The most prominent man after Semmelweis was Sir James Young Simpson, Bathgate, Scotland, 1811-1870. He became a professor of obstetrics at Edinburgh. There he acquired a large practise. In 1847, He was the first to employ chloroform in obstetrics and labor.

In 1847 the iron wire sutures were introduced by him, in 1850-1864, a long forceps, acupressure, or a method of controlling hemorrhage by means of a needle put through the vein to draw the sides together, and many other new methods in gynecology and obstetrics, such as, in 1843, the uterine sound, the sponge tent, the dilatation of the cervix of the uterus in diagnosis. The pains accompanying uterine cancer came to be called Simpson's pains. Version was reccommended incases of deformed pelvis. His memoirs on foetal pathology and hermaphroditism are noteworthy. Besides his work in obstetrics he made valuable contributions in other fields.

In Great Britain, John Braxton Hicks, London, 1825-1897, was a famous teacher. He introduced podalic version by combined external and internal manipulations in 1863. This formed the connecting link between the ages with Ambroise Paré's famous paper. His priority is disputed with M.P.Wright, who however employed or reccommended external handling in cephalic version in 1854. His observations on the condition of the uterus in obstructed labor, 1867, and on accidental concealed hemorrhage, 1872, was highly esteemed.

Barnes devised rubber bags to facillitate dilatation in labor. This principle has been used in modification of his idea by Champetier de Rebes in France, and Voorhees and Pomeroy in the United States. Ramsbotham wrote a good book on obstetrics which was most important. In it he insisted upon the purely physical character of labor and the tendency to interfere with it too frequently he denominates as meddlesome midwifery.

Carl Siegmund Franz Credé, of Berlin, director of obstetrical and gynecological wards of the Charité in 1852, and professor of obstetrics at Leipzig, introduced two things of importance; in 1854-1860, the method of removing the placenta by external manual expression, and in 1884, the use of silver nitrate in the eyes of the new-born

child to prevent gonorreal conjunctivitis with its large percentage of blindness as a result.

Sulpheric ether had been announces by the Americans, Morton, Wells, and Riggs. Sir James Simpson delivered a woman using it as the anesthetic. Experiments with chloroform led to its use in preference.

The capstone of the struggle for antiseptic obstetrics was started by Oliver Wendell Homes, and Semmelweis, and others who had realized the necessity of cleanliness and antisepsis during labor, but their vision was not clear enough to see the rationale upon which they were based. Holmes had tried before Semmelweis to prove that puerperal fever was a "private pestilence" and that the doctor could and did carry it about, but his teaching being very vague, was not accepted, nor was that of Semmelweis, either in America or abroad, until Pasteur, Koch, and others developed the science of bacteriology. On February 13, 1843, Holmes read a paper on "The Contagiosness of Puerperal Fever" to the Boston Society for Medical Improvment. In it he claimed that the physician conducting a post-mortem can carry the disease, and that washing the hands in Calcium chloride and changing his clothes after leaving a puerperal fever case was a preventative measure. His essays stirred up a violent opposition on the part of Hodge and Meigs of Philadelphia. In 1855 he returned to the charge in his monologue "Puerperal Fever as a Private Pestilence". In it he restated his views and stated that one "Senderein"(Semmelweis) has lessened the mortality of puerperal fever by disinfecting his hands with chloride of lime and using the nailbrush.

During this century a few Italian names were well known. Among these Galbiati, Morisani, and Gigli assisted with the revival of the symphysiotomy. The sickle- shaped knife of Galbiati was used by Morisani, and the wire saw of Gigli was used for the same operation as well as for a pubiotomy, or cutting of the Pubic bones. Bossi devised

a powerful, but clumsy dilating instrument which was capable of much damage.

In America, Philadelphia was the leading center. Dewees, Hodge, Meigs, Goodell, Parvin and many others whose teaching was not surpassed by any others. Their texts were also valuable. New York, Boston, Baltimore and Chicago have become prominent since then. The Maternities in th great cities were unsurpassed in service and equipment. In 1808. Dr. John Stearns introduced the use of ergot. In 1843, Dr. Oliver Wendell Holmes wrote his famous essays. In 1842,[2] Marmaduke Wright introduced a combined cephalic version. Davis, Taylor, Hodge, Elliot, Lusk. McLane, and many others made more or less useful modifications in the obstetrical forceps. Presemt day American obstetrics is in the front line and doing very good work, however there is much ground for improvement.

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[1] Reference Handbook Of Medical Sciences, 3rd edition, edited by T.L.Stedman,A.M.,M.D.,Vol.VI.,Pub. by William Wood & Co., New York,1916. pp.818-836.

[2] The Jackson Lecture- "The Makings Of Obstetrics", Felix Meyer, M.D., B.S.,F.R.A.C.S., The Med. Jour. of Australia, Vol. I.No. 3, Jan.21,'33.

3.Genesis XXXVIII 27-30

[4] Obstetrics, a Textbook for the Use of Students and Practitioners, J. Whitridge Williams, 5th Ed. D. Appleton & Co., New York & London, 1927. P.442.

Chapter II.

After the brief survey of the history of obstetrics and midwifery given in the preceding chapter, we should be ready to evaluate the present trends in obstetrical practise. Also we should realize the value of adequate care and stand ready to support any measure that will tend to better the lot ofthe mothers of the United States and of the world. Money spent to support clinics and instructions as well as to give medical and nursing care should be considered well spent.

In 1929, Denmark and Italy led in safety for mothers with 2.6 deaths per one thousand births. Japan ran a close second. In the middle was England, Wales,New Zealand, Switzerland, and Germany with four or five deaths per thousand deliveries, At the bottom was Chile, with 5 to 8 per one thousand, Scotland with 6.4, Belgium with 6.1, and at the very bottom, the United States with 6.6 per one thousand. Transmitted into figures, this means that sixteen thousand mothers die in the United States. As compared with Denmark and Italy, ten thousand of these deaths are unnecessary.

Dr. Howard W. Haggard thinks th t pregnancy should be considered as a nine months illness terminating with a surgical operation, and a convalescence of several weeks.

Maternity Center, New York, co vers a district along the East River, one-fourth mile wide and three miles long. It offers class instruction in motherhood. At various centers, mothers are given continuous medical and nursing care. At the delivery a voluteer nurse assists and cares for the family for six weeks. In new York City those not under its care had a mortality of 6.2 per one thousand, while those under its care had the lowest rate in the world or 2.2 per one thousand. This bit of statistics should convince anyone of the possibility of reducing matrnal mortality to almost nothing by the proper sort of care over the whole period of the pregnancy.

At the meeting of the directors of the State Bureaus of Child Hygiene held at the Childrens' Bureau in Washington in October 1924. A committee was suggested to draw up a set of standards of prenatal care for the use of physicians at clinics and also in private work. Dr. De Normandie was appointed to draw up the committee. Many important and well known obstetricians and instructors in obstetrics and gynecology were named as members. An outline of possible standards was sent to each member, and after much correspondence a meeting was held in Washington on May 2, 1925. The chairman, Dr. De Normandie, and the following were present: Drs. Adair, Schwarz, McKay, Mosher, Pickett, Florence E. Kraher, acting director of the maternal and infant hygiene division of the Children's Bureau.

A thorough set of standards were accepted, with the following preamble; "Prenatal care is that part of maternal care which has as its object the complete supervision of the pregnant woman in order to preserve the happiness, health, and life of the mother and child. Therefore all pregnant women should be under medical supervision during their entire pregnancy, for it is only by careful routine prenatal care that pregnancy and labor can be made safer". The patient should be examined by the physician at least once a month during the first six months, then every two weeks or oftener as indicated, preferably every week during the last month.

Such a systematized routine of procedure should serve to indicate the scientific approach that is being made to the problem of childbirth. A plan so well worked out should give the expectant mother a feeling of security, which some did not have previously.

Other countries are making rapid sdvances in the art of midwifery. Dr. Mendenhall delivered a paper at the fifth Annual Conference of State Directors in charge of the local administration of the Maternal and Infancy Act in 1928. In 1926 she visited Den-

mark and studied its methods of midwifery; system and simplicity seemed the keynote of all government activities including its health program. All normal deliveries are left to the midwives. These are trained, licensed, and supervised under State control. Dr. Hansen, of Denmark, pointed out the lowering incidence of puerperal fever since 1900, as a good indicator of the efficiency of the midwives and their knowledge of antiseptics and aseptics. From 1890-1922, thirty-three years, the reported cases of puerperal fever have fallen from ninety- three to thirty-four per 10,000 total births. In Denmark,puerperal fever has been reportable for fifty years, and this regulation is strictly enforced, but not in the United States. From 1920-1924 the percentage of deliveries by midwives increased from 82.3 to 84.7. The number of midwives was slightly smaller, and the number of physicians was slightly larger in 1924 than in 1920. In the United States ths deaths from puerperal fever actually decreased from 1900-1920, but from other causes they remained about the same, although these were not recorded. The rate of mortality from puerperal fever in Denmark has been less than one-half that of the United States, and has remained about the same although Denmark has a slightly greater decrease. In 1922, 1924,1925, Denmark's rate was .09 and the United States' rate 2.4 per 1,000 births. From all causes Denmark has one of the lowest and The United States has one of the highest rates of mortality.

The midwives are strictly regulated, and have been under some sort of regulation since 1714, when they were under the supervision of the ministers of the church. In 1787, a system of instruction was started in the free Midwife Hospital, which a few years earlier was incorporated with Frederick Hospital in 1771 as the new hospital for pregnant women in Copenhagen. In 1910 the foundation was removed to the new Royal Hospital, the present Rigshoitalst. This one hundred firty years of systematic training has been carried on as a

part of the Maternity-Hospital service by the physicians assisted by the graduate midwives and nurses. There are just two lying-in hospitals in Denmark, ane at Copenhagen, and one at Aarhus on the east coast of the mainland in Middle Denmark. This was intended for unmarried women, but difficult eases are also admitted. A physician may be called at any time by a midwife to assist with but charge at the difficult labor of an indigent women.

The candidates for training in midwifery were from all groups of society, and were betwweenthe ages of twenty and thirty years. Some had ahd nurses training, and all must have had the so-called primary school education. These were nominated by the district health officer, but were subject to the approval of the physicians in charge of their training and the Director of the Royal Hospital. After a one month probationary period they were given a comprehensive examination. If they failed in this they were sent home. Their instruction was increased from one year to two years ny the midwives themselves. This instruction was under direct supervision by Dr. Hauch, who ranks as professor of Obstetrics with his colleague, Dr. S.A. Gammeltoft of the State Medical School. These men were of equal rank, and divided the maternity service equally between themselves. The chief midwife, Miss Johanne Rodtness, has held her position for eighteen years, and the high level of training maintained is due to her organization and cooperation. A refresher course is offered for older midwives. Two or three hours are devoted to the instruction in theory for the pupil. The chief midwife gives practical instruction under the advice of the head of the school. A considerable amount of practical experience is afforded, because there are about 1,500 deliveries for forty students. Instructionis given in disinfectants and the hygienic treatment of the skin, on bacteria and infection, biological and the normal pregnancy. Also in advice to mothers after delivery, and during the pregnancy.

The duties of the midwives are numerous. They are sent for at

all confinements. and as a rule conduct all normal deliveries. They must call a physician for any irregularities, them the physician takes charge and the midwife acts as his assistant. If an anesthetic or narcosis is desired, the physician must be called at the proper time; to give one on one's own responsibility is allowed only if it is impossible for the physician to come at such a time, and if there is any special danger. A physician must be called in the following cases: transverse presentation, placenta previa, accidental hemorrhage, retention of the placenta or a portion of it, inversio uteri. post partum hemorrhage, possible eclampsia, prolapse of the cord or limbs, irregular head presentation, and breech presentation of baby at a firast delivery. Cases in which it is possible to act on the midwife's own initiative are ; extraction of the breech presentation in a multipara, version of the second twin, if it lies in a tramsverse position, rupture of the membranes with a normal head presentation if the uterine orifice is completely dilated, suturing of the lesser ruptures of the perineum, administration of ergot with lesser hemorrhages from the uterus after delivery, if the hemorrhage is violenter, she must send for a physician, in cases of blue asphyxia of the child, and normal care of the puerperal mother and child.

Any transgression is speedily discovered and penalized, At the end of their training an examination is held by Professor Hauch, a representative of the National Board of Health, and a midwife appointed by the National Board Of Health. First, second and third class diplomas are given. There are thirty to forty midwives graduated annually, but the number in practise in the last few years has remained nearly stationary at 11,000. In 1921 there were 11,000 midwives, or one for ev ry 3,100 births, and in 1920, there were 2,400 practising physicians, or one for every 1,600 births. The midwives averaged about seventy-three each in 1921. All physicians wishing to be licensed in Denmark must be graduates of the University

of Copenhagen. Only graduates, (seven years at this University) or of the National School for Midwives can act as accousheurs in Denmark. Quackery practically does not exist in Denmark, as it has been controlledby law since 1672, and such restrictions are rigorously enforced. The duties of the midwife are definitely stated by the Department of Justice in an edict of 1921, and she must not undertake any duties which are not contained in these instructions. She may apply for a district, or go into private practise. In either case, she must report to the district physician,,or a representative of the National Board of Health, and she is subject to his orders with the right of appeal to the National Board of Health or the Department of Justice. There are eighty-four district health officers in Denmark, twenty-six of whom are also county officers, each county having a medical health officer, who must have twenty-six months practical and theoretical training in addition to his medical degree from the University of Copenhagen. This includes four special courses, nineteen months of hospital training, and three months experience as practitioner in the country or small town. Continuation courses are heldannually for two weeks in Copenhagen for Health Officers. The county medical officer holds an annual conference of midwives when he goes through their regidters. An actual record in diary form of every bit of work they have done must be kept by each midwife. At thei conference he gives them any new information available before renewing their licenses. He can fine them from two to two hundredd kronen(1 krone equals 27 cents.) for neglect of duty. A midwife in whose practise a case of puerperal fever occurs may be suspended for a short or long period. Very few have licenses taken away. Their license may be taken away for charges of lunacy, alcoholism, morphinism, groes incapacity, disgraceful action.

Health insurance p lays an important part in any medical work in Denmark. In 1921, sixty per cent of thepeople over firteen yers

of age were participating in the system of sick-behefit insurance which receives partial support from the government. A portion of the expense of the delivery is obtained as part of the regular service to the insured club members, and in case of serious complication or hospitalization further aid may be furnished by the club or government. A large proportion of the physicians income comes from this contract practise, which has the hearty support of the Natioal Board of Health, a physician receiving as much as $5000 to $10,000 a year from these examinations. The midwives deliver all types of cases, give little anesthesia, little operative procedure is done by them, and they have a low mortality rate.

In another study made in 1928 by Dr. Mendenhall, on the existing conditions in Washington D.C., she found that the negro death rate was consistently higher than that of the white population. Her recommendation to reduce the high rate in general were for chlid-health clinics, habit clinics, outpatient obstetrical service, and also that a study should be made to determine how the high maternal and infant mortality rate among the colored population can best be reduced.

Graduate nurses are doing special, head, or staff nursing in the hospitals, private, hourly, and visiting, or maternity and infant nursing in the home. They are expected to know how to do any and all of the following things; find pregnant mothers and persuade them of their need for medical care during pregnancy and to go to a doctor, give instruction to fathers and mothers individually, and in class groups, about the mother's hygiene during pregnancy, and how it may be fitted into the daily regime of the home, the preparation for the baby, including his bed, his toilet supplies and the care of them, the preparation of the delivery supplies and plan for the mother's care during delivery and for her care during the lying-in period as wellas care ofthe family.

She must be able to give instruction in the care of the baby, including his bath, his rest, his exercise, his food, and his daily regime in relation to the needs of the family. She must observe and question the mother to learn about symptoms and discomforts needing the attention of a physician, including a simple urinalysis and the measuring of the systolic blood pressure. She must study the mother's home surroundings and family relationships so far as to discover and to help to solve any problem which in any way may disturb her peace of mind. The health of every member of the family must be considered, and they must be taught the fundamentals of personal and home hygiene, and arrangements must be made for health examinations, for the correction of defects, and for the following of treatments and advice. The nurse also assists the doctor ar midwife during labor and delivery. She must give or teach some responsible person to give the necessary care to the mother and baby during the days that follow. She should teach the family why a well baby needs the continuous medical supervision, and why a mother needs an examination by a doctor after the baby is six weeks old and help to arrange for them and for further care when that is indicated. She must also keep the doctor or hospital informed by sending a detailed report of each visit, including her findings and advice.

A committee from the White House Conference, in an effort to determine how well prepared the nurses of the United States were to meet these requirements, submitted two questions to three groups of nurses. The questions were: (1) State what you consider constitutes complete care for a mother from the beginning of her pregnancy until the baby is six weeks old. (2) How maternal mortality can be prevented. The groups of nurses were (1) Private duty nurses registered in 1930 for obstetrical nursing in the ninety-three Nurse's Registries. Each registrar was asked to send the names of

ten nurses to whom questions could be submitted. (2) Nurses graduating from schools of nursing in 1930 and taking the State Board Examinations in the summer months. Each Board of Examiners was asked to present the questions not for credit, but to contribute to the success of President Hoover's Conference. (3) Nurses taking post graduate courses in nine universities in nine states, and writing examinations in the summer months on 1930. The directors of the courses presented the questions as a supplement to their examinations as above.

The first group includes nurses who had a formal education in obstetrical nursing a few or many years ago, and who have added to their knowledge more or less by experience in obstetrical nursing. One thousand six hundred twenty-two nurses returned answers. The following are the returns: medical care was listed by 1182 nurses, although its type was not specified, adequate medical care291, care by an obstetrician 173, blood pressure 385, urinalysis 873, physical examination 317, pelvimetry or pelvic measurements 137, good personal hygiene 1078, good mental attitude 247, individual instruction 359, care of the breasts 166, nursing care 145, father's part 17, aseptic delivery 409, delivery at home or hospital 41, delivery at home 47, delivery in a hospital 401, delivery by a doctor 183, delivery by a midwife 15, delivery by an obstetrician 86, nurse in attendence 170, prophylatic in the babyes eyes 71, medical care141, nurding care after delivery 81, rest in bed 371, post partum examination 276, breast feeding 200, medical supervision of the baby 184, instruction 289. From this it can be seen that a vast amount of constructive work is yet to be done in order to establish a satisfactory norm of procedure for all to follow. Such a lack of unity of opinion should indicate that any attempt to supply a workable program of controlled care should receive our full support.

At the White House Conference, the meeting was divided into committees, Dr. Fred Lyman Adair was chairman of Committee B, on Prenatal and maternal care. At its meeting the following recommendations were proposed:

(1) the establishment of a nation wide obstetrical program, which has the support of the Federal, State, and County government,

(2) that greater opportunities be offered the general practitioner by the university medical schools for graduate instruction in obstetrics,

(3) that national schools for midwives for the white as well as the negro women be established in connection with the rural hospital in the district in which the midwife is a necessity. The midwife to be responsible to, and supervised by the trained obstetrician in the respective districts as in Scandinavia,

(4) that obstetrical care does not terminate when the patient is discharged from bed, therefore they recommended that post partum and prenatal clinics be established for the poor, and for those in moderate circumstances.

In the discussion which followed, Dr. Adelaide Brown, member of the California State Board of Health, reported State-wide maternal care and racial problems. To get an idea of how far such a program was appreciated and being carried out in California, she sent a letter to the county health officers (58 with 14 full time county health organizations) and to the county hospital medical superintendents.

The survey returns were as follows,

8 counties representing 3,512,550 of the population of 5,677,251 of the 1930 census carry out this continuous program under the county health service.

1 county reported 22% of the confinements in the county hospital.

4 counties reported partial programs- 2 of which had permanent well-baby clinics, 1 had prenatal associated with the well-baby clinic, and 1 had a post-natal associated with a well-baby clinic.

11 counties had no program beyond obstetric care.

1 had no county hospital.

3 had no funds.

2 reported that the county hospital was too far out to use for an out-patient clinic.

3 of these without programs were enthusiastic about taking over the whole program. One had fourteen well-baby clinics, and two hospital centers where work could be developed. One said the price suggested for medical service was too low. One that the program smacks of State medicine, and also that they had no funds. The counties sending no answers were those where there has been little development of the county hospital. Ten counties had no county hospitals. One cares for its maternal and child health work by staffing it with a well organized private clinic, which does prenatal care on all cases they confine for the county, and a child and baby clinic with free or pay care for the families of the county. One reports prenatal, but not regular post-natal work. Only cases are followed who have had obstetrical complications, forceps, toxemias, and hypoemia. No public health nurse is available for home instruction visits, for she is used for school work. Ten county hospitals did not accept maternity cases. The total number of births in the State for 1930 was 84,482.

This survey shows that a State such as California which is relatively advanced as far as communication, and general education is concerned, needs much support from the voters of the state in order to bring this start to a fulfillment.

The next speaker in the discussion was Mrs. Mary Breckinridge, director of the now well known Frontier Nursing Service Inc.

Lexington, Kentucky, which is now well known, reports that care can be given at the stations for $4.50 per day, and in the home it is only $10.00 for the complete care. Therefore, as they are operating on a limited budget, only those cases which require the care of an obstetrician are brought to the stations, all those that are progressing without complications are delivered and cared for by the nurse midwives of the service.

In 1906 the Census Bureau published mortality statitics for the first five years of the century. Attention was called to the high maternal and infant death rate. Interest was thus aroused by this report, and it led to the organization of maternity welfare work in several eastern cities prior to 1910. Data obtained in New York City in 1915, showed that the prenatal a nd maternal care was inadequate. Following this, in the Borough of Manhattan, maternity centers were established, whose functions were as listed previously.

In 1921 an act was passed forthe Promotion of Maternal and Infant Welfare. In it that through the State organization to promote the knowledge of what constituted good prenatal and obstetrical care, and so stimulate community resources so as to make available this type of care. By this act,in 1922, funds were available , so that each State coöperating under the act would receive $5000 outright and another $5000 plus an amount based on the State's population, if it was matched dollar for dollar by the State. This act was known as the Sheppard- Towner act. Before it was repealed on June 30, 1929, its benefits had been varied and valuable. These included the circulation of literature on infant and pre-natal care; the holding of conferences throughout the country to discuss the problems presented; the instruction of mothers in hygiene and nutrition; the progress made in the instruction of midwives (who deliver many of the foreign- born and negro women); better pre-natal care of mothers, and better

post-natal care of both the mothers and infants; education of the public as to the possibilities and importance of public-health work for the mothers and babies; the establishment of permanent pre-natal and child-health centers; and best of all perhaps, a reductionof the national infant mortality rate from 76 in 1920 to 65 in 1927, a saving of 11,000 babies out of every 1,000,000 babies born in the United States. In 1932 this rate had fallen to 57.9. There has been less improvement in our maternal mortality rate, which for the United States is the one of the highest among civilized countries; however it fell from 66.4 in 1922 to 64.7 in 1927.

In only ten states may aid be granted to any needy mother, married or single, although the laws of ten other states are almost as liberal. Even expectant mothers are eligible for aid in seven states, and unmarried mothers have been made eligible for aid by laws in Michigan, Nebraska, and Tennessee.

Many organizations are active in public health one of the most important being the United States Children's Bureau which functions by collecting and analyzing of facts about children, gathered by first hand investigation and by library research. The dissemination of these facts through the various channels to the people of the country, and the cooperation with the State, public, and private organizations in carrying out the necessary measures is another important function. Pamphlets on Prenatal Care, Child Care, and Child Management are sent to the different State organizations and to anyone applying. The American Association of Obstetrics, Gynecology, and Abdominal Surgery appointed a committee for maternal welfare in 1920. This committee reported yearly on the subject of maternal welfare and cooperated with the Joint Committe in the promotion of maternal welfare. In the yearly report emphasis was placed on an obstetrical conscience and the conservatism, on the need for improvement in obstetrical teaching,

on the value and fallibility of statistics, and on the importance of the spread of prenatal knowledge by prenatal talks to groups of physicians. In 1928 the report quoting Sir George Newman, British Ministry of Health, twenty-five of the deaths of the new-born which occur in the first twenty-four hours in England and Wales are due to accidents associated with the manipulations by forceps or version. In report by Dame Janet Campbell, it is stated that the birth rate of England and Wales faling: In forty years it has fallen from 30.5 to 17.5, the death rate, the death rate has fallen from 18.7 to 11.6, and infant mortality has fallen from 151 to 70. Since 1921 there has been a slight but steady increase in the maternal mortality. Fourteen thousand midwives are in active practise in England, and the rate for mothers attended by midwives of the Queen Victoria Institute for Midwives is only one-half the general rate for puerperal deaths. In 1889, reportingof puerperal infection was made obligatory, but the greater number are not reported. At the fifth British Congress on Obstetrics in 1925, it was reportedthat 75% of all the cases were associated with repeated internal examinations and various injuries.

The Committee on Maternal Welfare at a meeting in 1928, made the following suggestions;

(1) Better teaching of Obstetrics, equalizing the hours given to surgery.

(2) No candidate to graduate with less than fifty cases of labor.

(3) Making of prenatal care universal.

(4) The spreading of propaganda for the better understanding of care among women's clubs, health centers, and Parent Teachers Associations, that the prospective mother shall know what is good care.

(5) Post graduate teaching in obstetrics in the county society, or district meetings; more papers in the medical journals on obstetrics and allied subjects.

(6) Warnings as to instrumental or other interference, except upon consultation.

(7) Discouraging the indiscriminant use of pitruitin extract.

(8) Reiterating the danger of a vaginal examination with ungloved hands.

(9) Launch a campaign against needless Caesarian Section.

(10) Made a constant appeal to those in charge of labor to remember that, measurements ample, and presentation normal, the great majority of women will deliver themselves normally.

The American Medical Association through its sub-committee on maternal welfare appointed by the Section on Obstetrics, Gynecology and Abdominal Surgery, in 1929, reported on the factors causing maternal mortality. "So far as we know, there is in this country no carefully and well devloped system of obstetrical care covering any large center of population comparable to that which has been developed in Europe through many generations" The death rate among the colored from all puerperal causes as well as for puerperal septicemia is nearly two times as high as among the white women, also the rate is higher in urban than in rural communities. There is a tendency in this country to resort to surgical procedures in the general hospitals, and it is necessarily associated with high mortality and morbidity among mothers and infants, and this committee gave as some causes of maternal mortality the educational defects and stressed the need for more adequate clinical facilities, and puerperal sepsis is one of the first causes, as the rate has not declined in the last few years either in this country or abroad.

The American College of Surgeons has also taken an active interest in the question, and it has formulated a set of standards for maternity hospitals, and in 1927, it published a list of hospitals meeting these requirements. In a hospital meeting these standards these patients in a general hospital are absolutely segregated from all other patients, and they are given a preliminary examination for any signs, or symptoms of infective or contageous nature, such as; influenza, tonsilitis, rash, or pus dicharge of any kind. All patients with a fever on admission or developing one subsequently must be immediately segregated. Rigid aseptic technique must be observed in the labor room and ward. Indications for operative procedures must be duly recorded and incoporated in the case record prior to being carried out if time permits.

The National Organization for Public Health Nursing acts as a clearing house for information, by establishing and desseminating standards, and by stimulating the extension of publis health nursing throughout the country. It has published a manual for Public Health Nursing which gives technical standards, and routine for home nursing, including prenatal, delivery, and post-natal care.

The women's auxiliary to the American Medical Association have official health program for the improvement of public hygiene based on the recognition of the five essentials of effective public health work: (1) Scientifically trainded workers.(2) Contiuity of service of efficient public health officers in the city, county, and state.(3) Support of lay organizations.(4) Volunteer unofficial agencies where full time scientific health departments do not exist. (5) No health department, state, county, or city can do effective work without intelligent sopperation of the publis.

The Commonwealth Fund conducted demonstrations at Athens and Clark County, Georgia, Fargo, North Dakota, andRutherford County,

Tennessee, and Marion County, Oregon. At Fargo the demonstration was accompanied by a lowering of infant mortality for infants of from 42.7 to 31.3 per one thousand births, and under one year from 50.2 to 22.4 per one thousand. The percantage of hospitalization increased, being greater for those patients having prenatal visits from nurses.

Life Insurance Companies give prenatal and post-natal care, but intranatal care is not given. The activities of these companies fall into thre groups; collection of data on maternal and infant mortality, rate of live and still births, and various factors influencing these rates; Practical application of the accepted standards; education of physicians, nurses, midwives, expectant mothers, and the laity concerning the value and adoption of maternal and neo-natal care.

Many other organizations are working along the same way and are cooperating with each other in raising the standards of maternal care.

Much work has been done to find a safe analgesic which would be safe for both mother and child, inexpensive, and easy to administer. The dangers to be avoided are the paralyzing the power to work, and necessitating use of instruments, and the fatal asphyxiation of the mother and child. One of the most satisfactory to date is the synergistic colonic analgesia or the Gwathmey Technique. Dr. James T. Gwathmey, former president of the National Association of Anesthetists, Lying-in Hospital, New York City, has delivered 20,000 children with it without any loss of mother or child due to its use. An analgesia is a stage of anesthesia so light that the patient is still able to take orders and cooperate, a synergism is produced by using two drugs that when jointly employed will relieve pain over a longer period of time than either alone.

The technique followed simple and effective, after labor pains have become regular, and the cervix has become dilated about two fingers, that is,it will admit two finger in the opening, a hypodermic of Magnesium Sulphate and Morphine is given intra-muscularly into the buttocks. When the effects of this begin to wear off a combination of ether, quinine, and olive oil is given rectally. This treatment is successful in about 95% of the cases in which it is employed.

Other countries have social insurance which benefits the child and mother. For instance Rumania has a very generous system of insurance. The law of April 8, 1933, contains much more generous child-birth benefit provisions than the law of 1912, by which compulsory sickness insurance was first introduces in Rumania. By this law an insured woman is entitled to 50% of her wages payable for twelve weeks, to treatment by a physician or a midwife, and to the necessary medicine. By the old law, no medical treatment or medicine were provided in addition to the cash bebefit, which could be extended for another six weeks if the women nursed her child. In addition to extending the duration of the benefit, the new law provides a special benefit for a six weeks period if the woman nurses her child. Instead of receiving the cash benefit, she may be treated in a maternity clinic. During her stay in the maternity clinic the cash benefit is discontinued, unless she is supporting her family, then one-half of the cash benefit is paid. This law also provides for the uninsured woman of an insured man the same benefits, providing the husband has paid his dues for at least fifty-two weeks in the proceeding two years. If the financial condition of the insurance fund permits, the uninsured wife may be given in addition a cash benefit of 50% of the sick benefit to which her husband would be entitled in case of illness.

The need for more and better training facilities for the midwives who deliver so many mothers, even in this country is rather forcibly brought out by the ignorance of the negro midwives of the South. At one class group, some of them had the most unique of equipment. One had a small vanity case containing a tiny mirror, apink compact, a medicine dropper, a bottle of murky looking fluid, which she said was April snow water for the baby's eyes. Another had a bundle of dried everlasting flowers. One old lady said she had been practising for forty to fifty years and she had never lost a patient, it had been the Will of God, or foretold in the Book. These women were also very jealous, and would tell the ignorant women that the trained midwives would trick 'em. Their fees ran from fifty cents to two dollars and fifty cents. Among their amusing ideas were those cancerning water drinking; "Gal be careful or yo's gwine drown dat chile", "I allus make my patients drink a plenty o' water for I'se dun made up my mind dat dem kidneys is gotta float". Their ideas about sterilization were as queer. " I wants to tell yo'all what I Dun, three year ago I bo't me a pair O' bran new scissors en befo' I ebber used um I biled um a good fo' hours en I ain nebber had to sterilize um since". As stimulants for hastening the delivery they recommended gun powder - They'd like to see any hesitating infant hold out against that! Another means was what they called quilling, which was the blowing of red pepper through a goose quill into the nostrils of the patient to provoke sneezing, or another favorite was a good whiff of snuff. It is rather marvelous that as many women survived their gentle ministrations as did. Training has done much to eliminate this sort of midwifery from practise, and if it can be carried on, it can produce as good conditions in this country as in any other. For a country that prides itself on being , if not the most advanced, one of the most

advanced countries in the world today, we have been singularly slow in improving our care of mothers and babies.

Child bearing is something which does not seem to arouse the public interest by its emotional tie-up as a bill for disabled veterans or for the erection of a huge memorial to someone who is dead and can not receive any possible benefit from it. We go into ecstacies over a new plea for funds for the suffering heathen, who are probably doing well enough without any interference in their religious concepts. I have no quarrel to pick with those who try to better the lot of these people in the care of their sick , or their religion either, if the people that are contributing to these movements are sure that there is not urgent need for their support of public health measures at home.

The pregnant women of this country should have as good care as those of any other country, and their pregnancy can be made as safe here, if they will avail themselves of the prenatal care which they should have. Complications which might prove fatal, can be corrected many times if they are recognized in time. In some rural districts it is almost impossible to recieve the proper care because of lack of opportunity and funds. These people could be reached by a comprehensive program of public health, if the necessary funds were available. Adequate hospitalization is important if our maternal mortality rate is to be reduced, however uncomplicated cases can be delivered in the home with safety. The problem there is to know that there are no complications, which calls for good prenatal care. In California, statistics gathered in 1931 showed the following rates of maternal mortality in the different types of institutions: In the Hospitals in general the rate was 0.34 per one thousand births, in the maternity home the rate was 2.00 per on thousand births, and in the county hospitals the rate was 7.00 per one thousand births. This can be explained by the fact

that most patients who go to the general hospitals, have had adequate prenatal care, for the maternity homes it may be due to lack of facillities or again to the lack on the mothers part of availing herself of prenatal care, and lastly the county hospital's high rate can be explained by the type of patients, for they were probably too poor to avail themselves of any care prior th the delivery. This again emphasizes the need fer some sort of provisions being made to aid these people in securing this service which is so necessary. Legislation for funds to promote this type of work should receive our full support, and this will probably be in the not too distant future.

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