

Selections.

The Development of Obstetric Surgery.

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Operative obstetrics had its beginnings among the earliest observations and practices of those who first sought to minister to woman in labor. The appeal of the parturient sufferer, the sympathy of her companion and other friends, the love of children, and the sacredness of maternity, must from the remotest antiquity, have directed unusual attention to gestation and labor. In all ages and countries, their phenomena have appealed to medical practitioners to solve the mysteries of fetal development, to assist nature in her difficult and sometimes unequal tasks, to relieve the anguish of parturition and stay the hand of disease and death from mother and child. These appeals—incessant and universal—growing more significant with the progress of civilization, have enlisted the efforts of physicians in all ages, and have thus been potent factors in the progress of obstetric science. No other department of medicine has had more definite or louder calls to duty, and no other has done more to stimulate investigation or point the way to new achievements.

Beginning with the celiotomy whereby Æsculapius is said to have been delivered, obstetric surgery has saved hundreds of mothers and children by Cesarean section and suggested, if it did not indeed lay the foundation of abdominal surgery. The importance attaching to the work and the general participation in it by all the members of the profession, led to careful observation and study. Its arduous tasks and duties demanded at all times decision, prompt action, and the highest skill.

Historical development of obstetric surgery may be conveniently outlined under the following heads: (1) The study of anatomy by the Egyptians; (2) attention to cleanliness by the Jews; (3) the study of improved technique by the ancient Greeks; (4) podalic version by the Romans; (5) Cesarean section, as revived by Nufer; (6) invention of the forceps; (7) the use of chloroform in labor; (8) asepsis as inaugurated by Semmelweis, and perfected by Pasteur, Lister and others.

In all civilized countries the mortality of

childbirth and love of children have led to careful study of the human body, particularly of the maternal pelvis, and thus promoted a general knowledge of anatomy. In Egypt, which furnished the best record of early medicine, autopsies were more frequent than in any other country, and the effort of the Egyptians to solve the mysteries of parturition suggested the study of anatomy and the making of post-mortem examinations. As they did not shrink from human dissection, they became acquainted in a degree with human anatomy. The custom of disemboweling and embalming the bodies of the dead, favored the study of the various organs of the body.¹ Later under the influence of the Alexandrian school of medicine "organs were also examined by opening the bodies of living persons—criminals condemned to death being given over to the anatomists for this purpose."²

In the reign of Athotis, who was the son of King Menes,³ both of whom were physicians, lying-in apartments were maintained in connection with sacerdotal colleges at Thebes, Memphis, Sais and Heliopolis. These colleges were the prototypes of the later university at Alexandria. They had lecture rooms, wards, libraries, laboratories, as well as boarding houses for students. According to the Ebersian Papyrus (1550 B. C.) Athotis Inhoteps (physician), who has been styled the Egyptian Æsculapius, wrote a work on anatomy. Attention to the subject by the king is evidence of the high esteem in which medical science was held by Egyptians. The "Egyptian women were delicate and luxurious and bore children with difficulty," but the difficult cases, requiring manual or instrumental assistance, were attended by physicians "educated in the whole art of obstetrics," normal labors being cared for by meschennu (midwives).

With physicians for each part of the body (Herodotus) and for each department of practice, conditions were favorable for the advancement of knowledge of anatomy and the study of the mechanism of labor. In later times the "superior order of priests educated in medicine from the first thirty-six Hermetic books, were called upon to attend the most difficult cases of labor," and also treated the various diseases of women.

Thus it seems evident that the phenomena of gestation and the mechanism of labor aided in directing the Egyptian physicians to the study of the structure of the human

¹ Scripture record, 1700 B. C.

² Chamber's Encyclopedia, article Medicine.

³ Menes lived, according to Bokh, B. C. 5702.

body. In Egypt are to be found some of the earliest attempts at recording anatomical data. The early Alexandrian records were, through many centuries, of singular service in developing surgery. The Persians had knowledge (doubtless derived from the Egyptians) of methods of producing abortion, but by their theurgic rules "artificial abortion was forbidden."

Among the Jews, whose medicine was transplanted from Egypt, obstetric operations were probably not so extensively practiced owing to the sacredness with which they looked upon the human body. The study of anatomy was not so common as it was among the Egyptians. Even in the most abnormal conditions nature was unassisted. Midwives were depended upon chiefly to care for parturient women, and even in the most difficult cases they did not seem to have the assistance of physicians, for it is said that in such cases the midwives simply comforted the parturient until she was relieved by death. Deliveries took place with the woman in the sitting posture upon a low stool, or in the lap of another woman. Knowledge of obstetrics was, as these practices indicate, not extensive. "However, they were superior to many other nations, in reference to cleanliness and other hygienic regulations at the menstrual period and during the puerperium." The many wise and beneficent sanitary regulations of the Mosaic law are among the richest legacies of ancient medicines. The characteristic eutocias of Jewish women rendered operations rare, but in insisting upon scrupulous cleanliness Jewish medicine taught one of the most important lessons in operative obstetrics and general surgery, thus anticipating modern asepsis. Jewish physicians in the Talmudic period made frequent dissections, and performed many obstetric operations. "Caesarean section on the living female was practiced with success (Israel's) and they practiced version, evisceration and abortion."

Operative midwifery reached a degree of development in India three centuries before the Christian era, and suggested, there as in other countries, many improvements in general surgery. Ovariectomy and other forms of laparotomy, extirpation of tumors and herniotomy were performed by Indian physicians. Besides Caesarean section upon women who died in the latest period of pregnancy, "cephalic and podalic version, embryotomy, embryulcia and craniotomy, were performed. "When the child cannot be

brought forth," says the Ramayana (B. C. 250), "the physician may employ the knife in such a way that he may by no possibility cut a living child with it; for if the child is injured, the physician may destroy both mother and child together." They believed that accouchement required the aid of four stout women. If however, "the position of the child was faulty it had to be either improved by the physicians (version) or the labor must be terminated artificially." Altho in China and Japan medicine was cultivated 2000 years before Christ, these countries added practically nothing to obstetric surgery. Practical "midwifery was then, as it is now, in the hands of old women who studied the position of the child according to plates and drawings and made out a great number of superstitious manipulations, amulets," etc. "Physicians now busy themselves with prescribing remedies which are supposed to change the position of the child in utero, tho they know very little either of the uterus or its functions." In recent years many of the Turks have in their ordinary practice broken away from their ancient customs and ventured to practice operative midwifery.

In ancient times among the Greeks, midwifery was in the hands of women who were called *omphalotomai* (naval cutters). Their duties included kneading and rubbing the abdomen to improve the position of the child, the administration of medicine, etc. The *omphalotomai* were permitted to induce premature labor and deliver the placenta. Obstetric science included the position of the child and that of the parturient woman, adhesions and deliverance of the placenta. In presentation of the breech version was exclusively recommended, tho no practical method for its accomplishment was given. Hippocrates describes the viability of the child (in the seventh month), abortion, and artificial induction of labor, which operations he condemned. Other Greek physicians, however, "gave rules for the production of abortion, among them the tampon. They also describe the opening of the cranial cavity, thorax and abdomen of the child, amputation of extremities, and extraction by instruments.

Many of the operative procedures of modern times were known, tho in crude form, to the ancient Greeks. Caesarean section both upon the dead and living mother was known to them. Their first operations were performed only when the mother was dead. The operation of removing the child when

the mother was living was called by them "hysterotomia."¹ From Pliny's statement: "Auspiciatus, enecta parente, gignuntur sicut Scipio Africanus prior natus, primusque Cesarum a caeso matris utero dictus"²—and other records, it is evident that the name Cesarean was very early given to the operation, probably derived originally from caeso.

Grecian methods in medicine and surgery were largely adopted by the Romans. Philumenus (80 B. C.), a famous obstetrician, describes podalic version, contracted and oblique pelvis, points out extreme youth and too advanced age as causes of dystocia and mortality of children. Cornelius Celsus (B. C. 25-A. D. 50), an eminent surgeon, wrote a work on obstetric and general surgery, in which he describes methods of extraction by means of instruments, the employment of version by head or foot, the latter operation he employs in transverse presentation, and aid or the subsequent extraction by manipulation. Breech may be converted into footling presentations. He describes dismemberment and decapitation.

Soranus of Ephesus, later Rome (A. D. 68-147), was likewise a noted obstetrician and surgeon. He wrote a work on "Diseases of Women," which is the only extensive obstetric work preserved from antiquity written for the use of midwives. "Its contents furnish evidence that gynecology and obstetrics, both ordinary and operative, as well as the management of the child, belong among the most perfect branches of ancient medicine." He distinguishes the vagina from the uterus. Hysterectomy he regards as not necessarily fatal. "Inversion of the uterus may be produced by too much traction on cord in removing placenta."

Moles, pregnancy and tympanites were differentiated by percussion and succussion. He gives an account of the vaginal speculum, directions for anointing finger and hand for examination, evacuation of the bladder by the catheter, and "rupture of the membranes to aid in difficult labor." Version, he said, could be performed by "either the head or feet," and this in case of living children. For performing version the hand should be introduced "into the uterus with the fingers formed into a cone." Embryotomy, craniotomy and extraction are mentioned.

Galen contributed by his writings to the preservation of knowledge of obstetrics, anat-

omy and physiology, through the subsequent long period of comparative indifference to scientific medicine. Paulus Aegineta (A. D. 625-690) recognized the causes of hysteria and sterility, recommended clitoridectomy in nymphomania and ligation of limbs in metrorrhagia. He discusses extraction of the dead child, embryotomy and methods of delivery of the placenta. Very fat women were placed upon the abdomen "with the legs raised up behind," a position securing the advantages of the Walcher method.

Through the middle ages the condition of obstetrics may be inferred, says Baas, "from the fact that in faulty position of the child, Aëtius recommends the following proceedings: To cut off the upper and if necessary the lower extremities, also, then to decapitate, afterwards to deliver with instruments first the trunk, then the head, a style of management which prevailed down into the eighteenth century. The same author was acquainted, however, with podalic version and also advocated protection of the perineum.

In Arabia and Asia Minor the surgeons officiated as obstetricians in difficult cases of labor, and watched over the practice of midwifery by the physicians and midwives. Certain operations on women, such as lithotomy, restoring the prolapsed uterus, etc., could be performed by midwives only. Between the eighth and ninth centuries, Ishak of Hira, the most distinguished teacher and court physician at Bagdad, advised in fleshy persons, the knee-elbow position in instrumental cases. Rhazes (850-923) describes several operations among them "embryotomy for the relief of labor." Arabian physicians added nothing new, but helped to save Egyptian, Grecian and Roman science from total oblivion. By maintaining interest in Grecian medicine they promoted surgical science, and materially aided in the general revival of learning.

Among the Italians operative midwifery was united with surgery, but made slow progress for, as in France, it was principally in the hands of the barbers and midwives. The latter received their instructions in the art from the clergy. The council of Cologne "decreed in 1280 that in the case of sudden death of a woman in labor, the midwives must keep her mouth open with gags until the child was delivered by Cesarean section, so that the latter would not suffocate."

Cesarean section in Germany was performed at Medingen, in the year 1350, upon a woman condemned to be burned.

About the beginning of the sixteenth cen-

¹ J. Griggs Smith's Abdominal Surgery taken from Keister's System of Surgery, 1750.

² *Historia Naturalis*.

ture, in the golden era of anatomy, the age of Vesalius, Fallopius, Eustachius, and Gemini, surgery from Pare, and midwifery from Magnus and Rueff, received a new impulse. Röslin in 1518 revived podalic version. Cesarean section upon the living mother was practiced and "fell at last into the hands of men." It was about this time that "midwifery was liberated from its dependence upon surgery, and made an independent department."

The technique of podalic version and indications for the operation were carefully set forth by Guillemeau in 1594. Louise Bourgeois (1564), the midwife of Marie de Medicis, was educated in Pare's school for obstetrics in Hotel-Dieu. The latter was the first to direct attention independently to the comparative safety of footling births, which had previously been regarded as very dangerous. Pare was the first to induce labor artificially at full term in cases of hemorrhage.

The first authenticated Cesarean section planned and performed on a living woman was practiced by the *sow-gelder*, Jacob Nufer, of Siegershausen, upon his own wife, about the year 1500. After "thirteen midwives and several lithotomists had endeavored in vain to relieve her," her husband, having invoked the assistance of God and obtained the special permission of the governor of Frauenfeld, operated "eben als am sau" with such good fortune that the mother survived to the age of seventy-seven, and was able subsequently to bear several children, and even twins, in the usual way. The Cesarean section became the fashion for a short time. As a result of the enrichment of the technique of operative midwifery, Cesarean section seems in the course of the sixteenth century to have been practiced repeatedly, in Italy (1540) by Christopher Bain, in Neusse (1581), and at Vienna (1549) by unknown operators.

Francois Roussetus, a Paris surgeon of distinction (1581), wrote a treatise on Cesarean section entitled "Traite nouveau de l'Hysterotomotokie on Enfancement Cesarean, qui est Extraction de l'Enfant par incision laterale du ventre et matrice de la femme grosse, ne pouvant autrement accoucher," in which he enumerates fifteen successful cases. About the same time Pierre Franco sought to extract the head by the aid of an instrument resembling a speculum, and removed artificially an adherent placenta. Guillemeau recommended the *accouchement force* in acute partum hemorrhage, and Sylvius suggested symphyseotomy.

Gynecology became a separate branch under the influence of Conrad Gesner, obstetrician, gynecologist and surgeon. Practitioners who did most operative work in obstetrics in those days were the pioneers in other forms of surgery.

In Germany during the sixteenth century little advance was made in operative obstetrics. It was still largely in the hands of midwives and "ordinary surgeons, the better surgeons operating simply in the worst cases." The first separate treatise on midwifery in the German language was by Eucharis Röslin (1518), a physician of Frankfurt-on-the-Main. This work—*Der swangeren Frawen und Hebammen Rosengarten*—discusses obstetrical manipulations, obstetrical instruments, fetal positions, and the management of uncommon presentations. "When child is dead the author recommends induction of premature labor." The work, said to have been translated into several languages, describes in full the crude doctrines of operative midwifery of that day, "many of which continued in vogue for a long time thereafter."

Realeo Colombo, successor of Vesalius at Padua, wrote: "I have with my own hands drawn not only dead, but living children out of the uterus of the mother, not only once, but frequently, and as I did this I observed carefully the position of the womb." Thus it is evident that well-educated physicians were practicing operative obstetrics. Ordinarily, however, at that time midwives only were admitted to the lying-in room, a custom so strongly maintained that in the year 1521 a Hamburg physician named Veithea, who dressed himself as a midwife and brought to a happy conclusion a labor which the midwives could not complete, is said to have been burned in punishment for his sorcery." Midwives "carried instruments in a pocket case suspended from their belts."

In 1565, Thomas Raynalde, of London, translated Röslin's work on obstetrics under the title of "The Byrthe of Mankynde." "Dr. George Owen, physician to Henry VIII, Edward VI, and Queen Mary, and president of the College of Physicians in 1558, professed to have delivered Queen Jane Seymour of Prince Edward by Cesarean section in 1537," but the statement, says the historian Baas, "lacks all confirmation and probability." The celebrated Dr. Harvey is known to have practiced obstetrics as early as 1603, so that we may assume that during this century regular physicians attended, at least in England, ordinary cases of labor. Harvey, who also practiced

gynecology, wrote (1561) a work "On Parturition," in which he describes normal labor and operative procedures for difficult cases. Dr. John Maubray (about 1723) is believed to have been the first public teacher of obstetrics in England. Dr. William Gifford employed (1726) his extractors, and in 1790, Dr. John Aitken devised pelvotomy to displace Cesarean section.

The most memorable event of the seventeenth century was the invention of obstetric forceps. During this century version which had been practiced to some extent, for the first time met with favor, and was very generally practiced. Obstetric forceps, first suggested by Franco in 1576, as already stated, were invented by the Chamberlens—probably Peter, son of William, the latter coming from Paris to London in 1586. In 1616 Dr. Peter Chamberlen was accused before the College of Physicians of boasting that "he and his brother excelled in the management of difficult labors." For three generations the Chamberlens succeeded in keeping secret the nature of their instruments. Finally, Dr. Hugh Chamberlen sold his secret to the College of Physicians of Amsterdam. The secret also leaked out as early as 1725 in England, and the forceps were soon "widely known and quite generally used." They have undergone various modifications familiar to every physician. The advent of this beneficent instrument must have given a new impetus to operative obstetrics wherever it was known. De la Motte is probably within the bounds of truth when he says of obstetric forceps that "all human science hitherto has not been able to find such an instrument."

Great progress was made in obstetric science by the French in the seventeenth century. All the more common obstetric operations were popularized by Francois Mauriceau, of Paris, President of the College de St. Come; Jules Clement, De la Motte and others. The latter advocated version in contracted pelvis, in opposition to the treatment with cutting instruments still in vogue during this period." Version by one foot was first proposed by Paul Portal (1713). "He was a defender of the powers of nature as well as the author of the doctrine that face presentations could be terminated without artificial aid."

In Germany operative procedures in obstetrics gained ground slowly. Justine Siegemundin, the court midwife to the Electorate of Brandenburg, recommended "rupture of the membranes for the production of arti-

cial delivery in hemorrhage," and was an especial advocate of bimanual version.

The first recorded Cesarean section by a regular physician, was made April 21, 1610, the operation being performed by Jeremias Trautmann, of Wittenberg, "in a case of hernia of the gravid uterus with development of a living child." The uterine wound healed kindly, but the mother died on the twenty-fifth day after the operation.

One of the most eminent obstetricians of the seventeenth century was Hendrik van Deventer, of the Hague (1651-1724). He was author of a work entitled "Manuale Operativen," in which he recommends turning by the feet, but also employed cephalic version before or shortly after rupture of the membranes, resorting to direct traction of the head, until it engaged in the pelvis or having recourse, if necessary, to external aid." He taught that obliquity of the uterus was the chief cause of dystocias.

Comparative safety of footling and face presentations was taught by Van Hoorn, of Stockholm. He "regarded the replacement of the prolapsed arm for the purpose of accomplishing version, always unnecessary," and "was the first who had a correct idea of placenta previa." The following is a quotation from his Manual on Midwifery: "The afterbirth, which at the beginning of pregnancy, has seated itself upon or over the mouth of the womb, fastens itself there, to the great peril of the mother." This should be "pushed aside or penetrated" and the delivery hastened.

Early in the eighteenth century obstetrics separated to some extent from surgery, made rapid advances. The forceps were greatly improved by Johann Palfyn, who added a third blade for special use.

The two Gregories, the elder of whom founded (1720) the Hotel Dieu, "added a kind of lock to their forceps and used fenestrated blades." In all, there have been about 200 modifications of the forceps. The form of Levret was chiefly used in France, that of Smellie in England, that of Naegele in Germany. At the Hotel Dieu, about the middle of the eighteenth century, "the first obstetric clinic for physicians was established." Andre Levret (1703-1780) pointed out the definite indications for version, and improved the technic of the operation. He advised marginal detachment of placenta previa rather than central perforation, "regarded foot presentations as an indication for extraction," converted "breech into podalic presentations," and gave new "direc-

tions for the performance of Cesarean section."

Bandelocque rendered eminent service in his teachings regarding the anatomy of the pelvis. His invention of an external pelvimeter was a distinct gain to science. Symphyseotomy was first recommended and performed (1777) by Sigault of Paris. According to Baas, his first operation terminated in vesical fistula, with prolapsus of the vagina and uterus, "but a living child was born and the operation found a few imitators in all countries."

The first obstetric clinic in Germany was established at Guttengen by Roderer (1726-1768) the first German professor of midwifery. Stein (1737-1803) invented the first German pelvimeter, 1732, and "brought forward instruments for rupturing the membranes (finger rings) and a perforator."

The most distinguished English obstetrician of the century, Wm. Smellie (1680-1768) of London, "invented numerous instruments, including forceps with so-called English lock." The celebrated Wm. Hunter was an "enemy of instrumental delivery and was in the habit of exhibiting to a class his own forceps all covered with rust." Dr. Edmund Chapman, author of a "Treatise on the Improvement of Midwifery," employed instruments as early as 1723 and contributed largely to the diffusion of knowledge respecting obstetric forceps and their use.

In 1745 Bartholomew Mosse founded at his own expense the Dublin Lying-in-Hospital, the first of its kind in Great Britain. This hospital greatly favored the development of obstetric surgery. "Separate lectures on midwifery were still exceptional at most of the universities. "Lectures on surgery and midwifery were combined throughout the whole of the eighteenth century" (Baas). In this country Dr. Wm. Shippen, of Philadelphia (1736-1808), who had been a pupil of Dr. Hunter, of London, "delivered, at the College of Philadelphia, the first course of instruction in practical anatomy and obstetrics."

By the transference of obstetrics largely into the hands of the medical profession, and also by the establishment of independent chairs on this subject, in the medical colleges, operative technique in obstetrics has been wonderfully improved during the century just closed.

Perhaps the most important advance made within the century was in the domain of bacteriology, antiseptics and asepsis, and in the realization that all obstetric work is essentially surgical.

The method of expressing the placenta which bears his name, was first practiced by Carl Sigmond Crede, in 1819. This was a distinct improvement in the management of tardy expulsion. The first lessons in cleanliness by antiseptics was taught by Ludwig Semmelweis (1846), professor of anatomy and obstetrics in Budapesth. Observing that puerperal sepsis was frequent in a maternity ward attended by medical students who often went directly to this department from post-mortem examination. After having the students cleanse their hands thoroly in chlorin water before attending parturients, the result was that the mortality dropped from 11.4 to 1.27 per cent. in a few months. These results, together with Dr. Oliver Wendell Holmes' paper (1843) on "The Contagiousness of Puerperal Fever," and James Y. Simpson's paper (1850) on "The Analogy Between Puerperal and Surgical Fevers," laid the foundation of our present knowledge of puerperal sepsis. Pasteur and Lister reared the superstructure of surgical bacteriology and ushered in the splendid era of modern aseptic midwifery and surgery. In the half century since Semmelweis' discovery greater progress has apparently been made in surgery than in all the centuries that preceded this golden era.

The French favor now, as they did through the seventeenth and eighteenth centuries, instrumental interference and have done much to improve all phases of operative obstetrics. The English in their obstetric practice follow "on the one hand the principle of protecting the mother by utilizing to the utmost the natural forces of parturition, and on the other the principle of preserving the mother rather than the child, with of course, the eventual sacrifice of the latter for the sake of the mother. Hence as a result the frequency in England of craniotomy or artificial abortion as well as the infrequent employment of forceps in difficult labors and the avoidance of Cesarean section." This inclination to postpone operative interference is exemplified in the course pursued" by Sir Richard Croft (1819), obstetrician to Princess Charlotte, when he permitted her to remain in labor fifty-two hours, the child being born dead and the mother dying six hours later. Croft shot himself through chagrin over his mismanagement.* A change, however, has taken place in England. Instruments are now more frequently used, and Cesarean section more frequently performed. Among the eminent English obstetricians of the cen-

*Lusk's System of Midwifery.

ture, most of whom also devote attention to gynecology as well, were Samuel Merriman, Mansfield Clarke, Granville, Gooch, Rambotham, Davis, Locomock, J. Braxton Hicks and Robert Barnes. In Scotland Sir James Young Simpson, surgeon as well as obstetrician, was the first to employ ether anesthesia in midwifery, and on the fourth of November (1847) substituted chloroform for ether."

In America as in other countries, the establishment of medical colleges promoted all departments of surgery. The first independent chair of obstetrics, filled by Dr. Tennent, was established (1768) in King's College, New York. Instruction in obstetrics was also given in the College of Philadelphia by the professor of anatomy. The medical department of Harvard University was organized without a chair of obstetrics. In Dartmouth College obstetric instruction was given by "Dr. Nathan Smith, who for twelve years constituted the principal part of the faculty of that institution." In 1825, the same Dr. Smith was professor of the theory and practice of surgery and obstetrics in the medical department of Yale College, and about the same time Reubin D. Mussey was professor of anatomy, surgery and obstetrics in the medical school of Dartmouth College. Dr. Samuel Bard, Dr. Tennent's successor at King's College, was the author of the first American work on obstetrics (1807). On the organization of the College of Physicians and Surgeons (1857) the department of obstetrics was assigned to David Hosack, who was lecturer on botany and surgery. At the "University of Pennsylvania on the death of Dr. Wm. Shippen (1808), the chair of obstetrics was separated from that of anatomy and the former assigned to Dr. Thomas C. James, who was influential in organizing the lying-in department in a hospital available for instruction.

Many others, including Dewees, Hodge, Meigs, Bedford, Channing, Lusk, Parvin, King and Hirst, should be mentioned, for they have all contributed to the advancement of this important department of practice. This review of the development of obstetric surgery will, we trust, serve to furnish historical perspective, and increase our appreciation of the labors of those who have worked out the various steps of improvement. It will help to keep before our minds the eminent practitioners in this branch of medicine and their most important teachings, inventions and discoveries. Of the latter the mind will steadily revert to the knowledge of anatomy acquired by the Egyptians, the gos-

pel of cleanliness inculcated by the Jews, version, Cesarean section, the invention of forceps, the use of chloroform in labor, and the introduction of antiseptics and asepsis by the immortal Semmelweis. The development here outlined has been a growth of many centuries, and cannot be expressed in terms of inventions and discoveries, but an enumeration of a few of these will serve to illustrate how the present is rooted in the past, how the suggestions of one generation bear fruit in another, and how, therefore, historic medicine may be of service in evolving the medicine and surgery of the future. In medicine "our inspiration is in the future, but our landmarks are in the past."

The Egyptians laid a sure foundation, the only enduring foundation for surgery, in the study of anatomy. The Jews anticipated the highest need of the art, scrupulous cleanliness. The Greeks and Romans pointed out the possibilities of operative measures. The middle ages at least preserved the records; the moderns through Semmelweis, Pasteur, Lister and Tait, demonstrated the priceless value of asepsis. Some of the steps in the development referred to above are the following:

(1) The various methods of inducing abortion and premature labor were known, as we have seen, to the ancients.

(2) Version and methods for its accomplishment are described in various writings: Hippocrates compares transverse position of child to an olive extending crosswise in a narrow-necked bottle. Version was practiced and described by the later Greeks, Romans, Jews and Medievals. Among modern methods are those of Wigand, Mauriceau and Prague.

(3) Embryotomy, craniotomy, decapitation and amputation of extremities—all these operations have been practiced from remote antiquity. Among modern instruments for these operations are Blot's and Smellie's perforators, Hodge's scissors, Simpson's cranioclast, Tanier's basiotribe, Huevel's laminator, and Braun's hook.

(4) Cesarean Section: Æsculapius, Cæsar, Manilius, Edward VI of England and Sanctus, King of Navarre, are supposed to have been born by celiohysterotomy. A chalveur (Swine spayer) performed the operation in 1500. Roussetus in 1581 reported fifteen cases. Mercurius (1604), Valerus (1695), and others reported cases. Recent modifications, Sängers and Dühsen's.

(5) Celiohysterectomy: Porro's operation—or ovarohysterectomy—amputation of

the uterus after Cesarean section was first proposed by Michaëlis, of Hambourg (1809), and first performed by Storer, of Boston (1868). The operation was deliberately planned and carried out by Eduardo Porro in Milan (1876), with recovery. Laparoclytotomy, planned and attempted by Ritgen in 1821; perfected and performed by Professor Thomas (1870); no longer justifiable.

(6) Symphyseotomy: The first recorded symphyseotomy was performed in 1644 by Jean Claude de la Courvee, a French physician at Warsaw, carried out after the death of the mother for the purpose of saving the child. Jean Rena Sigault, of Angers, France was the first to operate upon the living subject (1777). He received his suggestion in a work of Severian Pineand, published in 1598. Sometimes called Sigault's operation. Gennaro Galbiati, of Naples (1820), published reports of cases. He is the inventor of a symphyseotomy knife, known by his name. Mortality: Zweifel operated twenty-three times without a maternal death, and only two children died. Morisani reports fifty-five cases with a maternal loss of 3.5 per cent.

(7) Forceps: In the "time of Hypocrates it was recommended in certain difficult cases of labor, to seize the child's head with the hands and put it down." The use of forceps in obstetrics was mentioned by Avicenna (1020). The invention of the forceps by the Chamberlens, has already been described. Stephane Tarnier, of Paris, invented the first axis traction forceps. Two hundred modifications have been made. Prominent among them are those of Davis, Simpson, Barnes, Sawyer, White, Hodge, Dubis, Wallace, Pajot, Nægele, Elliott, Landis-Davis' axis traction, Tarnier, Lusk-Tarnier, Simpson, Breus, Poullet.

(8) Episiotomy: Michaëlis (1799) was the first to practice this procedure. It is not very generally employed in England or France, is more common in America, but it is quite common in Germany and Austria.

(9) Chloroform: The discovery and use of chloroform or other anesthetics has aided in greatly extending operative procedure in this as in all other departments of surgery. To Sir James Y. Simpson belongs the honor of first using it in obstetric practice (1847).

(10) Asepsis: Beginning with the first authentic observations of living organisms by Athanasius Kircher (1672) and Leeuwenhoeck (1675) surgical bacteriology, chiefly through the brilliant work of Antonius Plencis (1762), Schultze (1836), Pasteur, Ehrenberg, Cohn, Koch, Lemaire and Lister, has

made it possible through surgical cleanliness to secure the brilliant results of modern surgery. The mortality of Cesarean section prior to the era of asepsis was from 50 to 90 per cent. "A few years ago in England the death rate of Cesarean section," says Hirst, "was more than 99 per cent." But with improvement in technique and perfection of asepsis, the statistics of this operation "have steadily improved until at the present time it has been possible to collect sixty-eight consecutive cases with a mortality of 5.8 per cent. and twenty-seven cases with a mortality of 3.7 per cent. In general practice, however, the mortality is still high." In America, according to Harris, it "ranges from 30 to 40 per cent." In instrumental deliveries, where formerly there was a mortality of from 20 to 40 per cent., we now have a mortality in such cases of less than 1 per cent. While formerly the mortality of consecutive labors, normal and instrumental, was from 5 to 12 per cent., we now have record of three thousand consecutive labors without a death.

(11) Curettement, douche, etc.: To the foregoing have been added in late years, curettement, trachelorrhapy, the douche, cervical dilators and various other instruments and procedures, which have greatly improved modern obstetric practice.

In our brief review we noted that obstetric surgery began with Egyptian knowledge of anatomy and has been perfected by the gospel of surgical cleanliness. Along these two lines, it has been developed, anatomy still its chief corner stone, and asepsis its crowning glory.

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