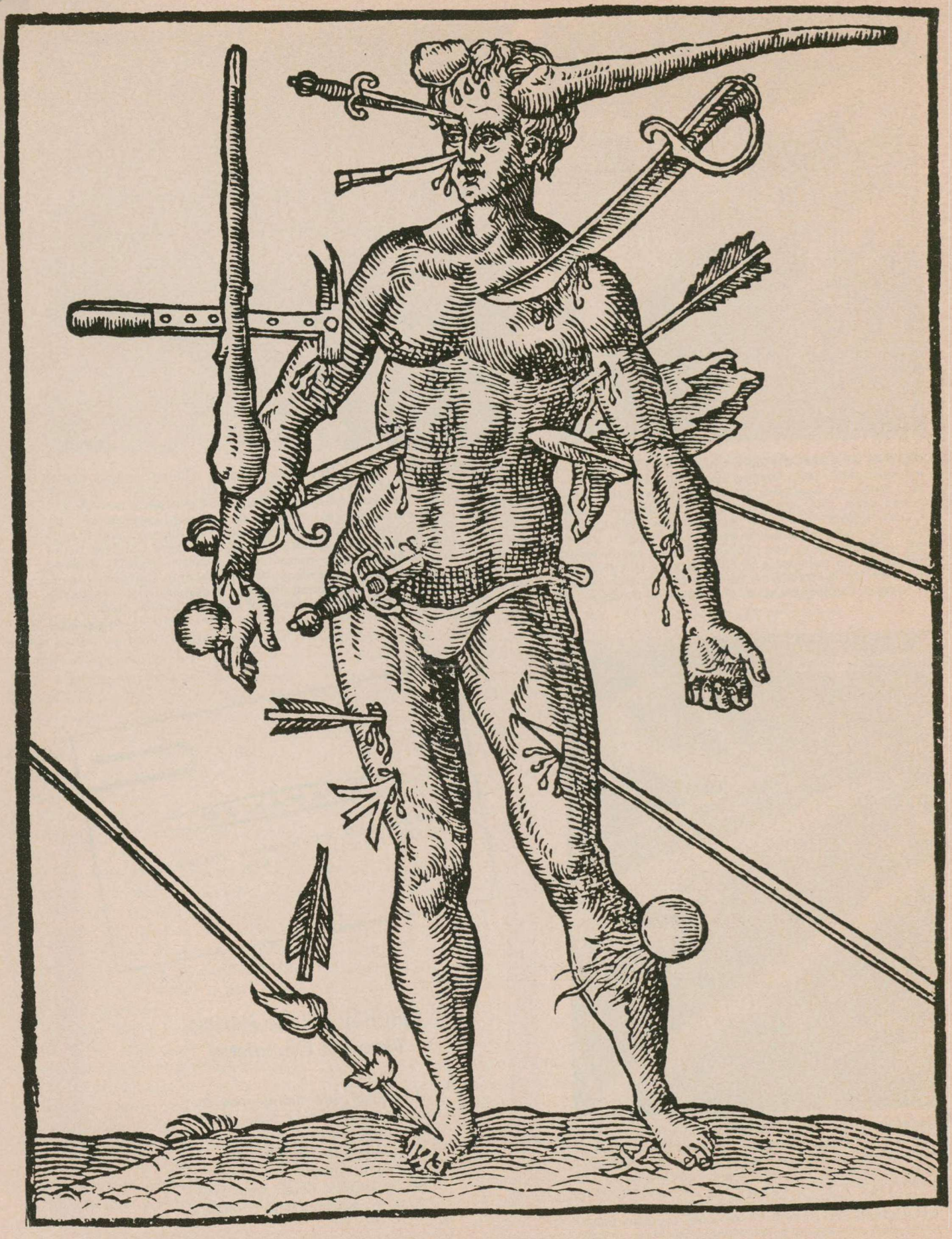


TORTURED HUMAN FIGURE appears in a 1617 English translation of Paré entitled *The Method of Curing Wounds made by Gunſhot. Alſo by Arrowes and Darts, with their Accidents.* The figure was used to describe various battle injuries discussed in the text.

Pare, Ambroise

Ambroise Paré

This 16th-century Frenchman was one of the founders of modern surgery. He spent most of his professional life on military campaigns, where he developed many of his humane skills in the treatment of gunshot wounds

by Sir Geoffrey Keynes

The extent to which an individual can influence the course of history has often been questioned, and it may be that in world affairs it is apt to be exaggerated. But in narrower spheres the importance of individuals is difficult to deny. In the history of surgery it is possible to point to a number of pioneers who shaped events literally with their hands. Outstanding among these is the figure of the 16th-century Frenchman Ambroise Paré. In the century of giants such as Raphael and Titian, Luther and Erasmus, Paracelsus and Vesalius, Paré was equally famous as the foremost surgeon of his time. He was the surgeon of kings and an idol of the common people. He was also one of the founders of civilized surgery—an innovator who introduced many practices which are in common use today.

His career reads rather more like that of a soldier than of a man of medicine. Paré was a military surgeon, a participant in the many wars between the kings of France and the Holy Roman Empire of Charles V, and most of his inventions in surgery were made on the battlefield. But he took care to record his adventures and discoveries in a series of books, and so his work became a part of the history of medicine.

Paré rose from a humbler origin than most of the other great figures of the Renaissance. Born in 1510 in a village of northwestern France, he was the son of a valet and barber. Following the example of an older brother and a brother-in-law, young Ambroise decided to become a barber-surgeon. This was the lowest grade of the medical hierarchy in 16th-century France, but it was the despised barber-surgeons who performed nearly all surgery, for the higher ranks of "surgeons" and physicians thought it degrading to use their hands. Lacking Latin and Greek, Paré could not aspire to admission to the medical profession, that is, election to the Faculty of Physicians of Paris or the Surgeons of the College of St. Côme. He therefore went to work, at the age of 22 or 23, as apprentice to a barber-surgeon in Paris, learning bloodletting, cupping and operations for cataract, hernia and gallstones.

His common sense and remarkable powers of observation soon won him an appointment as resident surgeon at the only public hospital in Paris, the Hôtel-Dieu. After three years he somehow attracted the attention of the Mareschal de Montejan, a colonel general of the army. Although Paré was still only an apprentice, de Montejan made him his staff surgeon. In those days there was no organized army medical service, the only doctors in the field being those attached to the person of a leading officer.

It was de Montejan's luck or foresight to create an opening for a young man who was to become one of the greatest military surgeons of all time. Paré soon realized that the accepted methods of treating the wounded were inhuman and inefficient, and he proceeded to introduce his own improvements.

It was generally believed that gunshot wounds were poisoned or infected by the gunpowder, and doctors customarily cauterized the wounds with "oil of elders scalding hot, with a little treacle mixed therewith." Aside from being extremely painful, the hot oil must have caused the death of tissues, thus helping to bring on the very complications it sought to avoid. Paré at first used the conventional treatment. One day, running out of oil, he substituted an unheated dressing made up of "digestive of the yoke of an egg, oil of roses and turpentine." "That night," he later related, "I was unable to sleep in peace. I thought that for lack of cauterization I would find the wounded poisoned to death, which made me rise in the very early morning to visit them." To his delight, he found the patients in much better shape than those who had been treated with hot oil.

Paré's "digestive mixture" was clearly not antiseptic in the modern sense, but it at least formed a protective layer and led only to a mild formation of pus instead of the acute inflammation which followed the application of scalding oil. It was the beginning of the rational treatment of gunshot wounds. Paré experimented with other dressings and later described his discovery in his first book, *The Method of Curing Wounds Made by Gunshot.*

Paré's successful innovation, together with his humane attitude toward the sufferings of the soldiers, established his reputation as a military surgeon, and his services were in great demand. But when de Montejan died not long afterward, Paré was so overcome with grief at the loss of his commander that he left the army and returned to Paris. He resumed the study of anatomy so that he might at length pass the examination for admission as a qualified barber-surgeon. This he achieved in 1541, at the age of 31. He practiced surgery in Paris, married Jeanne Mazelin, a woman of the people, and acquired some property on the left bank of the Seine and in the country at Meudon.

Yet Paré did not stay settled in Paris. He shortly joined the Vicomte de Rohan in the siege of Perpignan, and for the next 30 years he pursued his career as a military surgeon, taking part in a series of campaigns which brought him ever increasing credit as a surgeon and a rep-

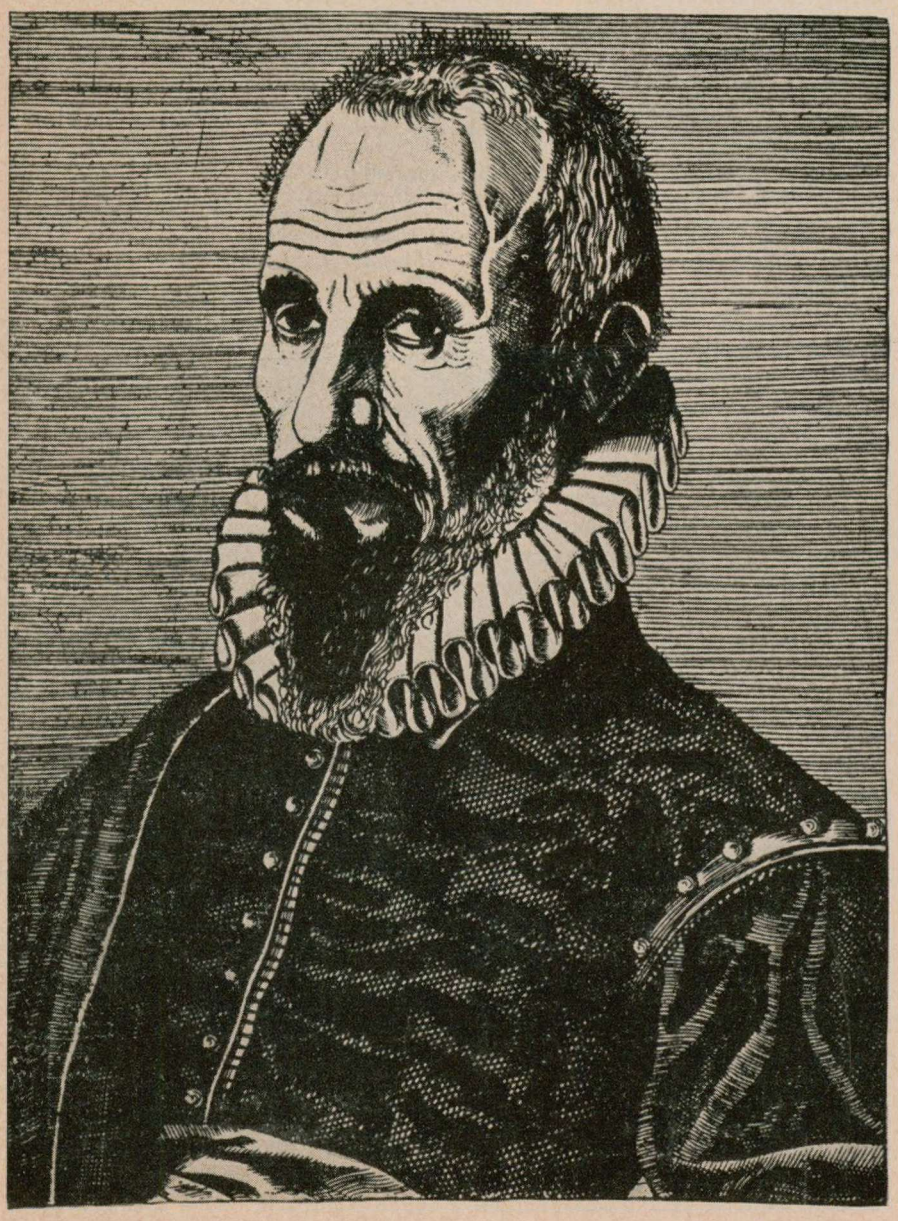
utation for outstanding courage, common sense and honesty. During this time he was surgeon to four successive French kings—Henry II, Francis II, Charles IX and Henry III. Paré's adventures are recorded in a remarkably entertaining and historically valuable autobiography. He wrote it to reply to a jealous physician who had attacked his novel surgical methods; fortunately his enthusiasm so carried him away that the reply became a long account of his experiences, which he titled *Apology and Treatise Containing the Journeys to Diverse Places.*

At Perpignan Paré distinguished himself by removing from the shoulder of the Grand Master of Artillery a bullet which had baffled other surgeons. His method of locating the course of a bullet in the body was to place the limb in the exact position it had occupied at the time the victim was shot. It was during another campaign with the Vicomte de Rohan that Paré applied a history-making innovation in surgery which has ever since been associated with his name. To prevent bleeding after an amputation, surgeons usually applied a hot cautery to the cut ends of the main blood vessels, inducing the blood to clot. Any mild surface infection at the site of the wound, however, would loosen the clot, and many amputated patients bled to death from the reopened ends of the vessels. Paré adopted the simple device of tying off the ends of the vessels with linen thread—what is now known as a ligature.

Shortly after this campaign he was appointed a surgeon-in-ordinary to King Henry II. An appeal for his help soon came from the besieged city of Metz, where a French garrison was surrounded by a Spanish army. Nearly all the wounded in the city died, and it was thought that the medicaments being used to treat them might be poisoned. Paré made his way into the city through the Spanish lines with the help of a Spanish-speaking servant. After surveying the situation he concluded that the cause of the high mortality was the severity of the wounded's injuries, abetted by the extreme cold. He succeeded in saving many lives with skillful dressing of wounds and common-sense treatment.

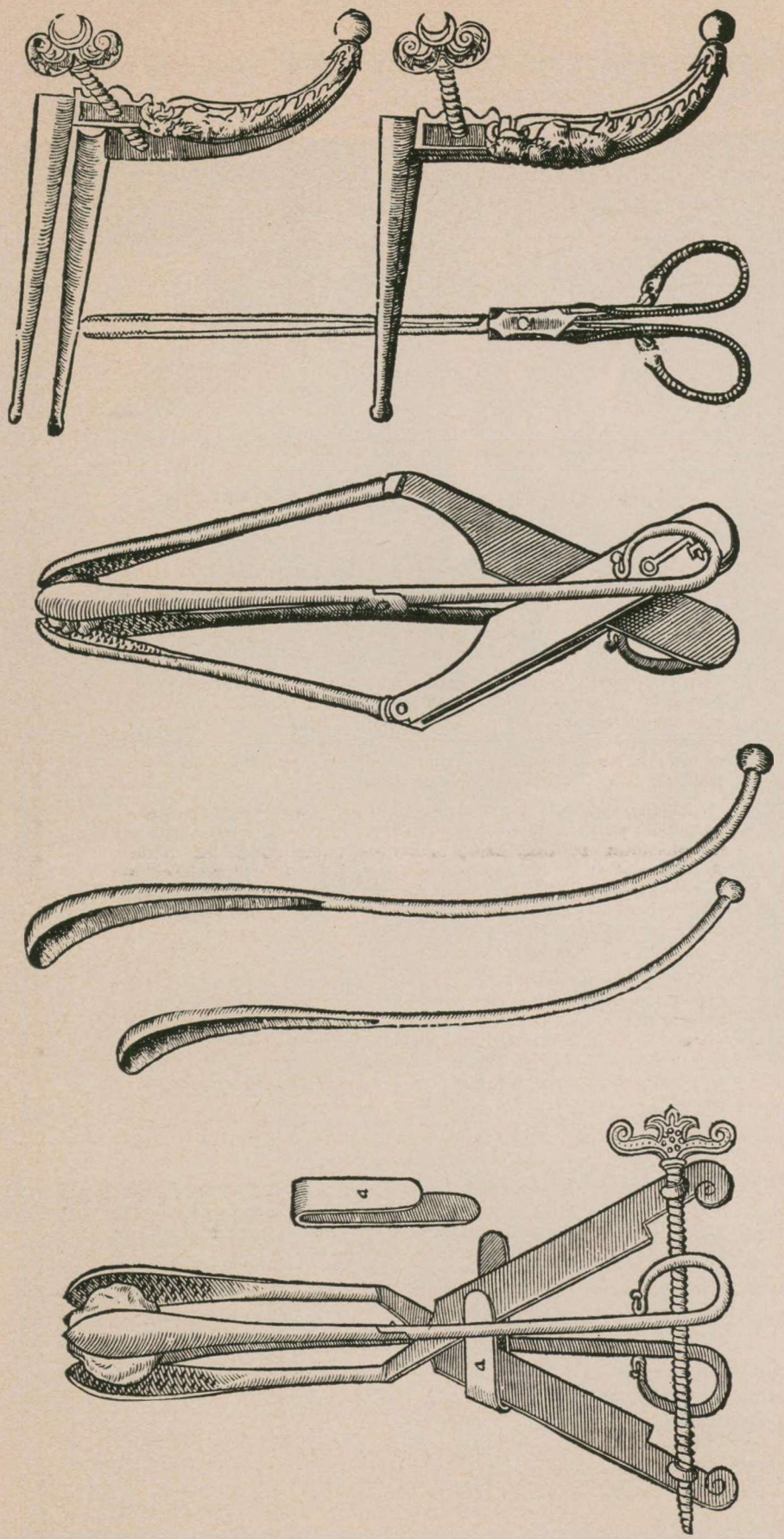
The following year Paré was captured by the Spaniards at Hesdin in Picardy. He avoided being put to death on the battlefield by attaching himself, disguised as a servant, to a French nobleman who was considered an important prisoner by the Spaniards. The nobleman had suffered a bullet wound through the lungs. Paré knew that his patient was dying and feared that he would be blamed, so he was delighted when he was ordered to hand over the treatment of his charge to a Spanish charlatan. When the nobleman died, Paré was asked to embalm the body. He did this with such skill and so shrewd a display of anatomical knowledge that he was asked to enter the Spaniards' service under the Duke of Savoy. This he had the courage to refuse. Ultimately Paré regained his liberty by saving the life of another wounded nobleman.

During his service under Charles IX of France, Paré performed one of his less creditable experiments. A substance known as "bezoar stone"—a calcium growth which sometimes forms in the intestines of goats and other ruminant animals—was supposed at the time to be an almost magical antidote to all poisons. Paré, who refused to believe this, was challenged to prove that bezoar stone was ineffective. He accepted the challenge and chose as the subject of his experiment an unfortunate cook who was to be hanged for the theft of two silver plates. The cook was given corrosive sublimate, followed by the useless bezoar, and died in great agony. Paré performed a triumphant post-mortem examination which proved that the bezoar had failed to counteract the effects of corrosive sublimate.



ENGRAVED PORTRAIT shows Paré at 72. Born in 1510, he became a military surgeon in his twenties. In 1567 he was appointed *Premier Chirurgien du Roy* (first surgeon of the king).

Between military campaigns Paré pursued his studies of anatomy in Paris. For these he used the body of an executed criminal, of which he dissected only one side. He claimed to have kept this half-dissected corpse for more than 27 years, but gave no details of his method of preservation. Working with



SURGICAL INSTRUMENTS were depicted in Paré's many books. The long device at the top, called a "crane's beak," was used to remove bullets. Superimposed on it are two views of a "swan's beak," through which it was inserted. Second from the top and at bottom are tools for the removal of larger projectiles. Between them are curettes to scrape blood clots.

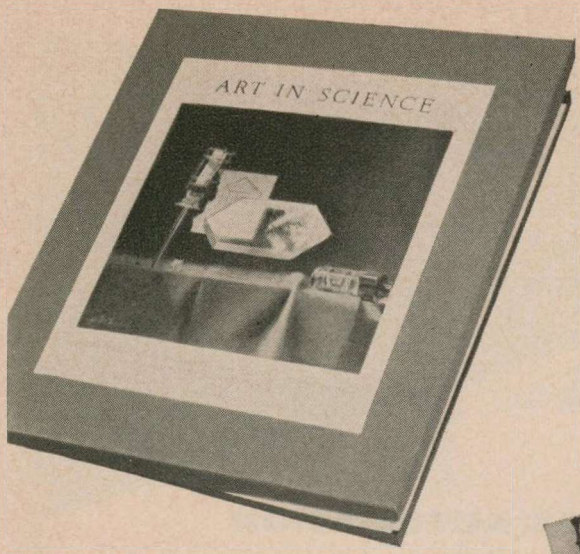
his friend, Thierry de Héry, Paré published a small treatise on anatomy in 1549, six years after his great contemporary Vesalius had published the famous *Fabrica*. Paré's treatise could not have owed much to the *Fabrica*, since the barber-surgeon was ignorant of Latin. The most important section of his book was an appendix on obstetrics and gynecology. It is plain to any medical reader of this section today that Paré must have based it on a great deal of firsthand experience and observation.

In the course of a chapter on surgical extraction of a child from the womb "whether dead or alive," Paré almost casually reported an obstetrical discovery of the first importance. He described a procedure for turning the fetus by drawing down the feet so that it can be extracted without injury to the mother. This maneuver, now known as "podalic version," is one of Paré's greatest contributions to medical practice.

Paré's reputation in Europe eventually became so outstanding that the physicians and surgeons of Paris elected him to their faculties without the usual examinations or fees, in spite of his lack of Latin and Greek. He went on publishing books, of which his most important was *Five Books of Surgery*, retired from military campaigns, and spent most of his time working in Paris, with the title of "premier surgeon of the King." Paré was encouraged by this title to attempt to gain personal control over all the surgeons working in France, but this met with defeat.

In 1573 Paré's wife died. She had borne him three children, only one of whom, a daughter, survived to adult years. Though now 64, Paré soon married again, and his second wife, Jacqueline Rousselet, bore him six more children. Two of them were boys, but both died in infancy.

In 1575 he brought together all his writings and published them in a single volume, the *Collected Works*. The learned physicians and surgeons of Paris, still jealous of him though they had elected him to their company, saw an opportunity to attack in the fact that the *Oeuvres* were not written in Latin; Paré replied briefly in a published note that Hippocrates, the father of medicine, also had written in his own language. Not handicapped by false modesty, the great surgeon knew that his book was the most enlightened surgical work ever published up to that time. During his lifetime three more editions of his work were published, and it was translated into Dutch, German and Latin. His splendid book was so full of improve-



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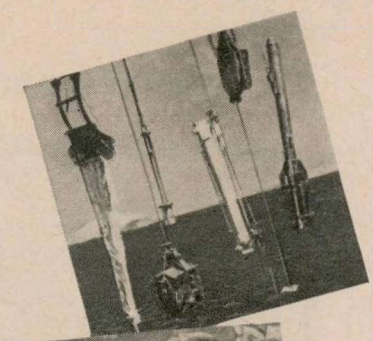

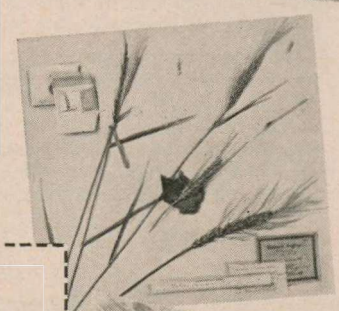

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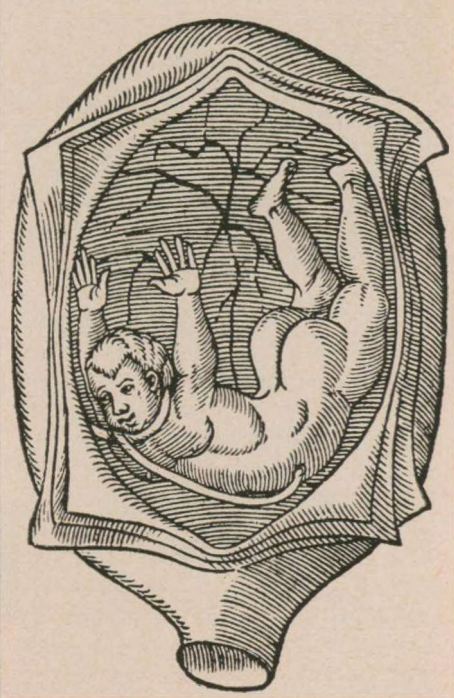
ments in the theory and practice of surgery that it remained the leading authority on the subject throughout Europe for many years.

Paré's contributions were not confined to surgery. He invented instruments for extracting bullets and arrowheads from wounds, for holding open the mouth of a person suffering from lockjaw so that he could be fed, for extracting teeth. He was the first to suggest the reimplantation of teeth knocked out of the jaws. He introduced the use of artificial limbs and popularized the use of trusses for hernia. He presented original medical descriptions of congenital "monsters," such as Siamese twins. He was even responsible for the first important work on medical jurisprudence.

Paré passed the last 15 years of his life living quietly in Paris. But at the age of 80 he emerged from seclusion for one final act on behalf of the common people from whom he had sprung. The city, in rebellion against the King of Navarre, was being besieged and its citizens were dying of famine. They wished to surrender, but the city's commander, the Archbishop of Lyons, answered their demands with bloodshed. Paré rose to protest against the commander's cruelty. Because of his great prestige, his plea for a peaceful settlement prevailed. Paré died soon afterward, on December 20, 1590, and he was buried in the Church of Saint André des Arts.



FETUS in the uterus was depicted by Paré. He devised a procedure, still in use today, by which the fetus could be turned and extracted without serious injury to the mother.