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SOME SIXTEENTH CENTURY
SURGERY

AS SEEN IN THE WORKS OF
FELIX WURTZ AND PIERRE FRANCO.

AN EDITORIAL ARTICLE REPRINTED FROM
THE ANNALS OF SURGERY.

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FELIX WÜRTZ AND PIERRE FRANCO,—A GLIMPSE OF
SIXTEENTH CENTURY SURGERY.

THE renaissance of learning, which followed hard upon the long night of the Dark Ages, made itself felt in all departments of knowledge. Petrarch and Bocaccio infused new life into literary Italy, Chaucer awoke the spirit of English poesy, and Raphael and Michael Angelo set up new standards of art for the world. The rude bit of machinery erected in the dim court-yard of Mayence by Gutenberg and Faust rendered possible the spread of knowledge by giving birth to the possibility of rapid and infinite multiplication of books. The bold voyages of Christopher Columbus and his followers gave to geographical and ethnological study such an impetus that it could never return to its wonted groove of superstition and imagination, but must thenceforward advance indefinitely in the light of truth and precision. The philosophical mind of Copernicus evolved that system upon which all future study of the heavens was to be founded. And the great religious movement initiated by the Wittenberg theologian, Martin Luther, the Genevese polemic, John Calvin, and the Dutch scholar of the Reformation, Desiderius Erasmus, quickened the reasoning and thinking powers of the age and awakened a spirit of inquiry which readily extended from religion to science.

In the sixteenth century, nuclei of intellectual activity appeared almost simultaneously in all parts of the known world. In Italy, Tasso commemorated the Liberated Jerusalem in an undying epic, and Ariosto made the name of Orlando Furioso a landmark of literature; in France, Marot made his prison walls ring with songs of religious faith, while Rabelais humorously commingled medicine, science, and romance in the hospitals of Lyons and Paris; in Spain, Sepulveda earned for himself the sobriquet of the "Livy" of his country, and Cervantes created the immortal knight of la Mancha;

in England, Sir Thomas More dreamed of Utopia and administered justice from the woosack, while the verse of Skelton and Wyatt opened up the golden age of English literature, rendered illustrious by the names of Shakspeare and Spenser, Sir Francis Bacon and Sir Philip Sydney.

Medical science also was attracting to its service many of the most illustrious of its ancient teachers. Andreas Vesalius, the young Belgian, who, at the age of twenty-two, became at the University of Padua the incumbent of the first purely anatomical chair ever established, published his magnificent work on human anatomy, which was to its predecessors as a Brobdignagian to a native of Liliput. Bartolomeus Eustachius, dragging out an existence in Rome handicapped by the greatest penury, was making the dissections which rendered his name immortal, and preparing the plates which, published 150 years after his death, have come down to the present day as among the most perfect expressions of anatomical portraiture ever executed. Realdus Columbus, the friend and successor of Vesalius, was working out the pulmonary circulation and preparing his work on anatomy, which was surpassed in originality and force only by that of his master. Michael Servetus, the hot-headed and versatile physician and controversialist, the pupil of Guentherius, and the fellow-student of Vesalius, was hair-splitting with the theologians, dissecting with the anatomists, and producing the heretical book, the entire edition of which, at the bidding of the stern old enthusiast, John Calvin, was formed into a funeral pyre for the living frame of its author. Gabriel Fallopius was delving deeply into the mysteries of nature at Padua, at one time studying plant-life so accurately as to attach his name imperishably to an important genus, at another devoting his attention assiduously to the form of the human body, and further immortalizing himself by discovering the canal in the temporal bone and describing the tube in the female pelvis, both of which still bear witness to his labors. Andreas Cæsalpinus, the Tuscan savant to whom modern Italy with patriotic amaurosis has awarded the credit of the discovery of the circulation

of the blood, in preference to the great anatomical lecturer of St. Bartholomew's, was attending physician at the Vatican, and working industriously upon the great physiological problem which he so nearly solved. The young Englishman who, early in the following century, completed the discovery of the circulation of the blood, was working untiringly upon the investigations which won for him undying fame and the pseudonym of "the Divine Harvey." John Caius was presiding over the College of Physicians of England, rendering medical attendance to three successive British sovereigns, and founding the college at Cambridge, which not only perpetuates his name but forms a permanent home for medicine there.

The names memorable in medicine at this day were numerous indeed. Thomas Gale, "the Paré of England;" Ulysses Aldrovandus and Jerome Mercurialis, of Italy; Joachim Camerarius, of Germany; Juan Valverde, of Spain; and Jacques Guillemeau, of France, labored effectively for the advancement of science; while Switzerland stood well to the front with Johannes Bauhinus at Basel and Guillaume Hildan at Berne.

The scope of medical practice, however, and the status of the medical and particularly of the surgical practitioner was still unsettled. The notion of ecclesiastical supremacy, which had been so strongly accentuated in the Dark Ages, had impressed itself forcibly upon the practice of the healing art. The Church largely associated the cure of the body with the care of the soul, and by far the greatest proportion of the physicians of that period were clerics. Every monastery had a monk or two who devoted special attention to medical studies, and occasionally one was found who gave instruction upon the subject. Some of these treated their patients only at a distance, never personally visiting nor receiving the sick, but making a diagnosis by examination of the urine and interrogation of the messenger. This practice was the prototype of the conduct of the nineteenth century quack, who makes his diagnosis from a lock of the patient's hair. There were, however, other physicians who habitually attended the sick in person, and these increased in number

with the spread of knowledge, while the non-visitants disappeared in the same proportion.

In the strictly classified society of the time the physician came to rank, as a member of a learned profession, with the lawyers, and only one grade below the clergy. Engagement in anything savoring of manual labor was regarded as degrading, and the great anatomical lecturers of mediæval times made their demonstrations at second hand by means of a servant who did the actual dissection. Surgical work, involving mechanical manipulations, was regarded in the same light, and but few physicians dared to engage in it, for those who made the effort were promptly ostracized. Surgery was a handicraft, and surgeons were craftsmen; medicine was a liberal art, and the physician a professional man. To the physician alone belonged the right to teach not only medicine but surgery and pharmacy as well, and to him belonged the sole right to authorize and direct the use not only of medicines but of surgical operations. Surgery was but an instrument in the armamentarium of the physician, and the surgeon but a machine for the application of the instrument. Under these circumstances the surgeon had no need to understand Latin nor literature; a little anatomy and some manual dexterity gained by practice with the knife were all that he required. He was denied the right to practise medicine, and in serious operations he was required to call in a physician to authorize his work. An illustration of the physician, the apothecary, and the surgeon, found in a fifteenth century manuscript of the *Grand Chirurgie* of Guy de Chauliac, is an excellent representation of the relative position of the three. The physician in the centre, robed in stately garb, has at his command in lowly alcoves on either side the apothecary and the surgeon, and of the two servitors the surgeon is represented in the more inferior position.

Occasionally a surgeon of surpassing genius would command respect in spite of his degrading practices, and ultimately the Fraternity of St. Côme, of Paris, obtained the right to practise to a certain extent independently of the physicians. Pitart, Lanfranc, Monde-

ville, and Chauliac were surgeons whose power could not be subordinated, but they won respect and position for their practices only by their own exceptional genius, and the respect accorded them died with them. Mondeville, in his lectures at the School of Medicine in Paris, made a strong argument in favor of the superiority of surgery to medicine, crystallizing his argument into several propositions showing that it was more certain, more to be preferred, nobler,—for it removes what medicine cannot cure,—more perfect, more necessary, and more lucrative. The efforts of Mondeville were ineffectual, for centuries later saw surgery still in the subordinate position, and centuries more slipped by before it was elevated to an equality with medicine. In the sixteenth century surgery was still largely the prerogative of the barber. It must not be thought, however, that all barbers were alike. There were specialists among barbers in those days just as there are specialists among surgeons in this. One barber devoted himself to shaving and hair-cutting with only occasional incursions into the field of phlebotomy; another devoted himself to ordinary surgery, treating wounds, fractures, and the like, and shaving only to keep the pot boiling; another devoted himself more particularly to the genito-urinary system and the treatment of deformities; and still others gave their attention to other phases of the combined chirurgico-tonsorial art.

In the sixteenth century Switzerland possessed two men, representing the second and third classes respectively, who did so much to lift up their class that they became authorities for surgical work, not only at their homes and during their lives, but throughout Europe and during several hundred years. One, representing the Teutonic phase of the curious dual-tongued Helvetian life, wrote in German, and the other, representing the Gallic side, wrote in French. Felix Würtz, of Zurich, and Pierre Franco, of Lausanne, while they never attained to the celebrity of their great contemporary, Ambroise Paré, the barber-surgeon of the king of France, were, nevertheless, factors of the greatest importance in elevating, purifying, and developing the art of Surgery.

In the early half of the century we are considering, Zurich was the home of Conrad Gesner, known in his day as the "Pliny of Germany;" he was not only a naturalist of unquestioned erudition, but a physician of marked originality, a teacher of wide-spread influence, and surprisingly prolific as an author; of the more than forty works which he produced upon medical subjects, many were published at Basel. Whether Gesner knew his fellow-townsmen, FELIX WÜRTZ, before he came to Basel to superintend the publication of his works, is unknown—indeed, it is not known that Würtz was in Basel at all—but whether in Basel or in Zurich he found in him a congenial spirit, and it was through his influence that Würtz was prompted to condense his surgical experience into a "small Enchiridium and pocket-book, easily to be carried about one, as well in time of war as in time of peace, for a present Instruction to Novices in Surgery."

At this time there were no biographical encyclopædias with full and flattering details written by the subjects themselves, and all that we know of the life of Würtz must be gleaned from the few modest words let fall here and there in his book. He was born at Zurich early in the sixteenth century. He tells us he had been thirty-seven years in practice when he wrote his book in 1563, and he had been apprenticed to a barber at a very early age. It is fair to suppose that the thirty-seven years included his apprenticeship and that he was about fourteen when he entered the barber's shop, which would place the year of his birth in 1512. At the close of his apprenticeship, not satisfied with the career of a simple barber, he extended his studies beyond his native city to Nuremberg, Rome, and Padua, in the latter city possibly enjoying the prelections of Vesalius himself. He was a great admirer of that prince of quacks, Paracelsus, and was himself held in high esteem by Van Helmont, Etmüller, and Boerhaave. The one incident in his career which is fully brought down to us is the operation of arteriotomy done upon him by the advice of the famous Gesner.

"I found it by experience," says he, "how hurtful hot glimbles of shines are to eyes; for one time being troubled with an headach,

opening my eyes towards the place where the windowes stood open, looking then on a new whitened Wall, thinking the windowes were shut (but stood open unknown to me) there strook a white glass or shine so strongly into my brains that I thought I nere felt so great a pain in my life. Let every honest body be perswaded to beleeve that the like will be caused in young children, and not suffer any white or hot shinings fall on their bad eyes. I have been troubled with many infirmities in my body, but never felt greater pain than that head ach, caused by looking on that new white Wall, hath brought upon me; and was enforced by these extraordinary pains to have the pulse or temple vein on the left side to be cut, which all Surgeons, Barbars, and good friends diswaded me from; my Wife, also by perswasion, suffered no knife or other cutting instrument be brought near me and kept all such things from me, and all such that came to see me, were entreated not to let me have any manner of instrument to cut or stab withal. All were afraid I would lay violent hands upon myself, by reason of the great pains I was in. Thus making pittiful mourn to Surgeons and all my friends, on whom I called for help, entreating them to cut the pulse vein on my left temple, which crying and calling I continued for ten dayes, those that heard my outcries supposed I did out of impatience, for the which none would hearken unto my cries; but I continued still with my lamentation, hoping one or other would take pittie on me: At last my friends considered of my cries, and promised in case any one would undertake the cutting of the pulse vein, they would then consent unto my demand; I thanked God that my cries were heard and my pulse vein to be cut: then came that famous and conscionable Dr. *Cennad Gesner*, comforted me and my familie, and advised that my pulse vein should be opened, then returned I thanks to God, again, who put this councill into his heart: then was I asked what means should be used for the stenching of that blood, and incision; I gave directions to the Surgeons then present, that my friend and brother-in-law, *John Waser*, should make the incision, he took it in hand, and by my leave, and all the Master Surgeons then present,

placed me on the beds side, and made the incision at twice cutting, the wound bled vehemently, before he laid down the incision knife ; I found myself better, for the which the Lord be praised for ever : thereby was I delivered from all my pains, and being drest according to the direction I gave, I lost nere another drop of blood ; after that I felt myself better in my head, than ever I was in my life, so long as I could remember. To the Lord be Praise, Honour and Glory, for evermore : Amen."

Würtz was enough of a leader in his profession then to cause the neighboring surgeons and barbers to congregate about his sick bed. He was evidently the head of an honest burgher family, on good terms with his relatives by marriage for he selected his brother-in-law to operate upon him. He was happily married, for the affectionate solicitude which, for fear that he would injure himself, withheld the knife from him in spite of his cries, and entreated his visitors to do likewise, bears ample witness to the loving watchfulness of a faithful wife. He was the father of a family, for his "eldest Son" was a cripple, and, says the afflicted father, "all those that know him do pity him ; for he is quite disabled to do any work, and must continue so as long as he liveth."

Where Würtz worked is a debatable question. The older authorities, while admitting Zurich as his birthplace, considered Basel as the scene of his later labors ; in the English version of his book, he is spoken of as "that most famous and renowned Surgeon, Felix Wurtz, Citie Surgeon at Basell," and the French version assigns him to the same city, but Brunner's more recent studies assign him to Zurich—a view which is sustained by his own statement in the eighteenth chapter of the second part of his book where he says, "About the year 1540, the whole Company of Surgeons at Zurich hath been baffled and put to a non-plus by Sprains and small cracked bones, some whereof . . . were under cure a whole twelvve moneths . . . before they came to my hands. . . . Some of the patients may be a witness this present year 1563." The date of his death is also involved in doubt, but 1575 has been taken as the approximate time,

since the edition of his book, which appeared in 1576, was put forth under the care of his brother, Rudolf Würtz.

In 1563, Würtz produced his book, *Practica der Wundartzney, was für schadliche Missbräuch bey der Wundartzney in gemeinem schwanck und warumb die abzuschaffen seind*. The practical character of the book struck the popular taste and numerous editions were demanded during the century ensuing. In Dr. Johnson's *Epistle to the Reader* of the English translation, published in 1656, he stated that at that time twenty-eight editions had been printed in German and two in Dutch. Probably as many more were issued afterwards. The edition published at Basel, in 1576, appeared under the editorship of a brother of the author, Rudolf Würtz, who was practising surgery at Strasburg, and the text of this edition was followed in all succeeding impressions. Basel produced editions also in 1596, 1612, 1616, 1638, 1667, 1670, and in 1675, an edition with a treatise on obstetrics adorned with figures by H. Schaeu. Editions also appeared in Breslau in 1651, in Wolfenbittel in 1624, and in Stettin in 1649 and 1659. It was translated into French by the *sieur* Sauvin, and published in Paris in 1672 and 1689.

A surgeon with an English name, who was practising his profession in the Low Countries and who had previously translated it into low Dutch, prepared an English edition in 1632, under the name of *An Experimental Treatise of Surgerie In Four Parts*. 1. *The first Part shewing the dangerous Abuses committed among the Modern Surgeons*. 2. *Of Cures of all Sorts of Wounds in Mans Body from the Head to the Toe, and of other Infirmities belonging to Surgerie; how the same ought to be observed according to the Fundamentals of Art, to be handled and cured*. 3. *Of the Symptomes of Wounds, how they are to be discerned and known before they appear, what they foretell, how to prevent them, and how to cure them when apparent, &c.* 4. *Treatise of all kinds of Balmes, Salves, Plaisters, Ointments, Oyles, Bloud-stenchers, Potions, Tents, Corrosives, &c., which are used for Wounds and have been mentioned hitherto in the former Parts of the Book; how they are to be Artificially prepared and used well. All which are*

very plain and easie to be understood and managed by an ordinary capacity. By that most famous and renowned Surgeon, FELIX WURTZ, Citie Surgeon at Basell. The praise of whose worth you may read in the following Epistles, the worth itself in this Book. Exactly perused after the Author's own Manuscrip, by Rodolph Wurtz, Surgeon at Strasburg. Faithfully the second time Translated into Neather Dutch, out of the twenty-eighth Copy printed in the German Tongue, and now also Englished and much corrected by Abraham Lenertzon Fox, Surgeon at Zaerdam. London. Printed by Gartrude Dawson, over against the Black Horse in Aldersgate Street, 1656.

This elongated title might have been shortened and at the same time more correctly translated as the Treatment of Wounds, their Abuses, Symptoms, and Cure, for the book is in no sense a treatise upon surgery in general. The scope of the work, however, is so well shown in the sub-title that another list of the contents is hardly necessary. Twelve pages and four chapters in the Second Part are introductory, forty-two pages and ten chapters are devoted to wounds in general, two chapters and nine pages to gunshot wounds, and five chapters and seventy-five pages to fractures. He does not discuss any of the special operations, nor does he touch upon any of the subjects considered by Franco.

Like the genuine reformer that he is, he opens his book with a discussion of the abuses that had crept into the surgery of his day and the methods of correcting them. "Many profess themselves surgeons," he remarks, "and are ignorant Asses." And these persons greatly increase the dangers of wounds by probing and handling them. "To what end is it," says he, "to groap and grable so much in Wounds? Ah! how little do they consider, that with the poaking and searching they break and destroy that natural Gluten or Balsom (which settleth for the healing and is the healing itself) and spoil it altogether." Indeed he is very emphatic in his condemnation of meddlesome Surgery, affirming even that "a Surgeon ought to be careful that he breath not into the Wound, . . . for such breathing may cause that a Water may stick to the Wound, and incline it

to rottenness," and again that "the air be kept out as much as possible it may, for air doth hurt to the Wound." He might almost be mistaken for a disciple of the present school of aseptic surgery when he remarks, "yea, I say this, that if a Wound were onely kept clean and duly dressed, it would sooner heal, than if all the Art of Medicine had been used, and all the poultesses applied to it."

The consideration of abuses occupies the entire first part, amounting to one-sixth of the book. It will be convenient to refer to some of these later in connection with his own views, but he closes his account with an example, "shewing all kind of abuses," as exhibited toward a single patient, which is so delicious and picturesque as to be worthy of quotation in full. "At Padua, in Italy, some fourteen years ago, a Noble German, in a Duel with a Polander, received on his left hand a Wound near his little finger, cross over the joynt; thereunto were called the chiefest Physitians and Surgeons, which came riding on their Asses, and took the wounded into their cure and drest him the first time, but how and what they had done then is unknown to me, because I was absent; the next day I went thither also to see their dressing, at which I saw excellent rarities and mysteries, which I should not speak of, yet for the publick goods sake I cannot hold my tongue. And when they undrest him, they took off from the Wound the Poulteness they applied, and with the little Seeker they searched round about in the Wound, which fell tedious to me by reason of the Patient, and the Wound being thus long sounded, then the Physitians stept aside to consult together, where an Anatomist made an eloquent discourse, which of the veines, and which of the sinews in that Wound were cut and hurt: after the consultation they shewed and did an extraordinary Master Piece; for they took two flat wicks or tents of linnen, and dipt it in their joynt-wound-oyle, and thrust them into the Wound, whereof the Wound gaped very much, then they laid a plaister over it, and upon that a cloth full of medicinal Poultenesses, which I cannot name all. In this manner they drest him; and there was no end of their seeking in the Wound, of their stuffing and cleansing at their several dressings.

“Now hear what happened, and what their Medicines did work: few days after the Wound began to water and to run, which we call the joynt-water. Then they fell a purging of him, used all manner of things they could think upon to cure the wound, but all to no purpose, for they could not stop the joynt-water: then more things they tried and what? they tied and bound his arme very hard and close by the elbow, hoping thereby to stop the course of the joynt-water, and other simptoms and rheumes coming from the head. But as they misunderstood the thing, so it went contrary to their expectation. For as much as they mist in the stopping of the course of the joynt-water, so much the more was there caused an inflammation and swelling, whereby the wound grew most horribly slimie and dangerous, at last it swelled up to the arm; then grew on a putrefaction in the veines and sinews, and holes fell in the arm of a finger's length, thus the arm rotted, For to such simptoms truly belonged better skill than they brought forth and used. They supposing a heat had caused all this mischief, which indeed was not heat, but a meer suffocation, the which they knew not, which they went to quench with Vinegar and Well water put together, washing the wound therewith, dipping clothes in it and applied them. But all this was not yet enough, for these remedies availing nothing, and the Patient's weakness growing on more and more, then they fell on other things, met and consulted, and disputed the cause very much, at last they resolved to expell all these simptoms out at the Patients Arse, because it could be no otherwise. Here Glisters and Purges must walk, Sirrups, Electuaries, Decoctions of Honey and Sugar, all must help the poor Gentleman to some ease, for he was forced to swallow up a whole Apothecaries shop; when all came to all, the poor patient died in great misery. This was their good practice they used on that brave Gentleman: I have not told the fourth part of the abuses they committed upon him for it is too rude, and too grosse, and pitty to have it told. An old Woman might have cured this wound with a small and mean hearb, without any danger and pain.”

He considers it “exquisite that a Surgeon be well seen in

Anatomy, of which among us there is great defect, so that scarce one amongst many understandeth the internal constitution of man, nay hardly have ever seen any man anatomized." Yet he continues that it is unnecessary for a surgeon to be an anatomist, though he should have a "superficial knowledge of it, especially of mans bones" and "joynts." To the nineteenth century surgeon the amount of anatomy thought necessary by Würtz to be "well seen" is superficial indeed. The character of his own acquaintance with the subject may be observed in his statement that "there goeth a strong sinew down from the Shoulder, divideth itself about the Elbow, from thence it scattereth into the Hand." In another place he explains, "in case the party be run quite thorough [the breast] . . . though none of the inward parts be hurt, yet it may be that that thrust hath hit some of the white veins or sinews on his back, which is dangerous by reason of the affinity they have with the Heart. It happeneth many times that when a party is wounded in the Back that he fals lame, either in his hand, arme, or elsewhere, where no defect at all was, which is caused only by those white veins that are hurt."

He was evidently ignorant of catheterism, for he advises in case of urinary suppression the application of a hot decoction of Anise to the "privy parts;" that failing, he strengthens the decoction by the addition of parsley seed, maiden-hair, berberries, and vinegar; and if this also is unsuccessful he adds to it the internal administration of Maiden-hair and Winter cherries in the patient's drink, combined with a diet of "Oculi Cancrorum."

He does not lay much stress upon the condition of the bowels, and slight costiveness gives him no uneasiness, but, says he, "if he hath no stool in three or four dayes, then it is time to look to his back dore. Some think to remedy this with purging, but . . . it is better to make Suppositories of Honey and Mice turds mingled with salt." This seems very like a sixteenth century anticipation of the doctrine of similars. However, our author did not confine himself to these very simple agents, but if purgation was thought to be necessary, he resorted to a "Potion of Sene leaves and Rhubarb."

He considered suppuration an invariable consequence of a wound, "for no wound can be drest so soon but the flesh and veins will change and separate; however, I did read, and heard it also, that some Wounds were healed, which never had any matter in them: I confess I never saw it and will not gain say it but leave them to their opinion; yet I have cured a stab without bearing any matter and that stab was but narrow." "Slight wounds," he says in another place, "may easily be cured, with pure Cloath or lint, Wine, Water, Salt, etc., for the natural balsam in Man doth much." He devotes an entire chapter to pus or "Corruption," which he characterizes as the "excrement of Wounds," the result of their effort to heal themselves, and he describes divers kinds of "matter," varying according to the source. "Flesh and blood have their singular matter; the white veins have their proper matter: and another matter affects the bones: the same must be understood also of the internal members. Bones at there healing yeild a white slime and somewhat thick: but if they are not in a right tune, they give a clear water, without any smell, and looks greasie." "White veins afford a clear water, somewhat tuff and slimie." "Flesh affords its matter somewhat thick, white gray or of a carnation color."

He advocated conservative surgery: "If you have in hand a flap-wound, then do not cut off the flap as many do, for Nature may strangely recover that and close it in a short time."

He strongly disapproves of the routine use of sutures, urging that stitching, by closing the superficies, tends to the formation of fistula, the precluding of cleanliness, delay in healing, and the prevention of examination of the appearance of the wound. Wounds of the extremities should not be stitched unless there hang down a great flap, "and chiefly have a care you stitch none of them that went into the great Muscle or joynt, as in the Shoulder, Elbow, Hands, Knees, Knockles or Ankles, for if you stitch them with needle and threed (as the fashion is) you will cause onely great pains. Rather stitch them with a twisted stitch or twisted Silk, for these must be stitched strongly, more strongly than other Wounds, or else

they break out again. For if you would stitch a Wound on the Shoulder like one on the Belly, that stitch would not hold a day and a night." Face wounds should not be stitched unless a flap hangs down, and his readers should not be discouraged if "a Nose or an Ear is altogether grown cold at the stitching . . . but stitch it on." Wounds of the chest should be stitched because the "wound being healed, loosen and thrust off the stitches, and leave a passage, whereby the matter can pass," and he adds in justification of the stitching here, that "these wounds have room enough to yeeld their matter, which other Wounds in outward joynts and members have not." In case of intestinal wounds he recommends suture and cleansing "with Milk in which Anise seed is boyled;" however, he adds, "these Wounds are counted mortal, and it is a hard matter if ever they recover."

He devoted two chapters to gunshot wounds, remarking in the beginning that perforating wounds are "held mortal because the internal parts are spoiled and hurt by that heat" and by the resulting inflammation. In common with all old surgeons he considered it essential to extract the missile, but he thought the various extractors of very little value, and that the bullet would gravitate to or near the external wound if the patient be laid with it downward; "if none of these be, Experience must shew you another way." To quench the burning or fire in the wound, "prepare an Ointment of Honey, and not of oyl or other greasie things, spout it into the Wound three or four times, or any other way you can best get it in, and moisten all places within, even the bullet also if it be in it. Then take a tent of Gum Tragacanth, annoint it with the said Wound-ointment and thrust it into the Wound; at last apply a good stiptick Plaister upon. Then minister to the Patient of prepared saltpeter, ʒss in fresh Well water or, according unto occasion, sirrups of Violets or of Sloe thorn floures." "Let the Patient drink Water, let him not be opprest with thirst; the raw Water is better than if boyled." "The greatest pain being gone, then another Cooler may be used, made of Oyls or fat things."

It was his custom to cover all wounds with a "Wound Plaister," which was intended not only to protect the injury, but to act curatively also. The chief of these Plaisters was the Opodeldoch Plaister, which "separateth all impurities from wounds, taketh away the proud and superfluous flesh, causeth the growth of good flesh, preserveth from bad symptoms and bringeth on healing in a short time." As an example of the wonderful and fearful compounds in vogue during the Middle Ages, the formula of this Plaister is worth quoting in full :

Virgin's Wax, lb 2

Darkish Turpentine, lb 1

Sallade Oyl, ℥ 3

Mix these together and put to it the

Juice of Celondine,

Juice of Oak leaves,

Juice of Starwort,

and Speedwell, ana ℥ 1 fs.

Boil these and let all the moisture thereof be consumed: then put these Gums to it:

Ammoniack,

Galbanum,

Opopanax,

clarified with Vinegar, ana ℥ ¾

Colophone, ℥ 1 fs

Amber, ℥ fs

Mastick,

Myrrh,

Frankincense,

Sarcocolla, ana ℥ 3

When these are a little cool, then stirr among it:

Magnet (prepared and pulverized), ℥ 1 fs

Crocus Martis, ℥ 2

Crocus Veneris, ℥ 1

All this must be stirred into the Plaister and when it is almost cold, then stirr amongst it

Red sweet earrh of Vitriol (as before you

put in also of prepared Tutia ℥ 3,

and of prepared Calamy ℥ 10) as

much as will make the Emplastrum

brown red.

This mixture was made into rolls, which softened under moderate heat, and kept for use. Formulæ are also given for the preparation of the Magnet, Calamy, Tutia, Crocus Martis, Crocus Veneris, and earth of Vitriol, used in constructing this Plaister. He also gives the formula of his Brown Ointment which attained great celebrity in the treatment of wounds, but the receipt for the plaister may suffice as an example of the grape-shot style of his prescriptions.

The ligature of bleeding arteries, the application of which upon the battle-field, made his contemporary, Ambroise Paré, famous, he does not refer to at all, but advises the use of "quilts, lints, or mulpuss, cotton Wool, or the like," and strongly disapproves of the use of "nealed irons and other burning things." He holds "all Blood-stenching good (except Cauteries and Corrosives) if used without danger and prejudice to the party, be they made of what they will,—*viz.*, of Rye meal, of Mill dust, Pulmonaria, &c." The author's "first and chiefest bloud stencer" is a "Plaister" made of Amber, white Rosin, dark Turpentine, Mastick, and Crocus Martis. To apply the plaister, "make the place dry with a sponge round about the wound and apply the afore written plaister to it, spread on a bladder, pritty broad and great." Several other "bloud-stenchers" are described and he refers to the then very prevalent practice of phlebotomy for the relief of hæmorrhage with disapproval.

In common with the surgical practice of his time, Würtz laid great stress upon the value of Vulnerary Potions to dispose the patient to healing through the digestive system. He described in great detail the construction of nine mixtures for this purpose. One of them is "a rare Master Piece for a Wound or Stab, where you suspect there is a bone, proud flesh, broken veins or other impurities;" another is for "spoyled Wounds, which yieldeth a tuff and slimie matter, environed with a swelling, and are deep and hollow underneath, are like to turn to a Cancer." Another potion, which he used extensively was the "Anodynum Labdanum," which was nothing more or less than a crude tincture of opium.

He devoted five of his longest chapters to fractures, and in one

of these he emulated the immortal Silas Wegg by "dropping into poetry," having for his theme the soul-stirring story of the application of bandages in the case of fractures. The following are his "Rimes:"

"The whole sum be spoken briefly,
 And this warning is given really:
 Bind the Patient not too strong,
 Else he's choak'd and his blood gone;
 Thereby is caused the cold Fire,
 It shames the Surgeon, to the sick it draws
 Smarting swellings, and hearts misery:
 Give way for the pulse and do not tarry.
 This advice I give you in good troth,
 In following my counsel be not sloth:
 In the binding be very cautious,
 Not too hard, nor yet too loose;
 The Band must hold the Fracture stiffly,
 Yet the pulse must have its way throughly.
 Signs bring to the Surgeons head
 That there is no pain where swelling is laid."

If a fracture were compound, he advised conservative treatment. "Myself marvelled many times," says he, "how it was possible, that one or the other in such symptoms could have their food, and how life could remain in the Leg; however God gave his blessing thereunto, that many such Patients recovered to their going and jumping, and could perform all manner of work. I give you further warning, not to bereave any Member, though there be never so little hopes for their recovery, for Gods blessing may be upon it, beyond all mens expectation." In illustration he quoted a case of a compound fracture, in which "the Leg was off, hanging onely on a little piece, and I wondered much, how any life could be left in it." He trimmed up the wound, placed the limb in a comfortable position and dressed it with a great deal of ointment; after fifteen days, he found it in so good a condition that he set the fracture, and leaves us to understand that he obtained a good result.

He believed fully in the influence of the moon upon the healing

of wounds. "When a patient groweth still weaker," says he, "at the decrease of the moon, then you may expect at the new moon a heavy and dangerous paroxisme: if the patient continueth in a strong heat at the increase of the Moon, it signifieth that a wound symptom is come, or any other bad accident."

The entire book is characterized by an intense devotion to practical experience. He poetically affirms that,—

"Nature in herself doth remain,
Which Experience makes known amain.
No new thing on earth e're comes on,
Things past do return again."

"What is that to me," continues he, "what opinion *Gallen, Avicen, Guido, &c.*, hatch'd in their breasts, were not the things they brought forth in their age new things." And although his entire book was simply a presentation of his personal practice and observations, he remarked very modestly in one place, "I am but a common Barber-Surgeon, not learned and much experienced," and again, "I do not intend to gain-say that, which others have found good in their trials; for experimental knowledge is endless, and every day new things are brought to light, and they may be such which I do not know of."

While Felix Würtz was thus gaining in Zurich or Basel the experience upon which to found the opinions expressed in his *Practica der Wundartzney*, another city of Switzerland was honored by the presence of another surgeon whose methods of thought and points of view were so similar to his that it would seem as if there must have been some acquaintance between the two. PIERRE FRANCO was born in Provence at Turriers, which is at the present day the principal town of the Canton of Sisteron in the department of the Lower Alps. Nothing is known of his personal chronology except that he published a small surgical treatise in 1556 and a larger one in 1561. In the former work he stated that he had been in practice for thirty years, and, supposing that he began at the age of twenty, which is

quite justifiable as he passed through no long period of preliminary study, his birth would have taken place in 1506. The date of his death is equally problematical, but it is suggested by Nicaise that as his second work shows in its final arrangements a lack of finish, which is absent in the first, the supposition seems plausible that the hand of the author was not engaged in its completion, and that he had either died very recently or was entirely disabled by sickness at the time of its publication in 1561. It was in a similar way that Fisher determined the exact date of the death of Realdus Columbus, who is shown to have died in 1559, the same year as his patron, Paul IV, by the existence of identical copies of his *De re anatomica* of that date, in one of which the dedication to Paul is signed by the author and in the other a dedication is signed by the author's sons to Pius IV, who succeeded Paul in that very year.

Franco was eminently a self-made man. His family name, modified by himself, was Francou, Francoul, or Francone, and these names are not uncommon in Provence at the present day. He passed a brief apprenticeship with a barber-surgeon, and his only allusion to any special training is a reference to a hernia-surgeon as having been one of his masters. What education he may have acquired is uncertain, but it was probably slight. Latin was an especially easy study for a Provençal, and the first edition of his surgery contains a number of Latin formulæ, while in the second there are frequent Latin citations, all the formulæ also being in that tongue; furthermore, he describes the operation of Marianus Sanctus whose *Libellus aureus* had not then been translated, and he refers extensively to the work of the older Masters. But this does not necessarily indicate that Franco was a Latin scholar, for while the classical works on surgery had been written in Latin, French translations of many of them were available in his time. Hippocrates, Galen, Salicetus, John de Vigo, Paulus Ægineta, Stephanus, Vidus Vidius, and Guy de Chauliac had all been printed in French, and even in case of the lack of translations, the collaboration of scholars to assist in the composition of books was a common feature of the literary work of that day. It

has been stated on the authority of Eloy that Franco taught anatomy at Freiburg and at Lausanne, but there appears to be nothing to confirm this statement. He would appear, on the contrary, to be rather deficient in this respect, unless a familiarity with osteology may be excepted. In his chapter on *la maniere de conjoindre les os* he states that he prepared three or four skeletons while he was at Berne and at Lausanne and he appears to be very proud of his accomplishment, but his anatomical knowledge does not appear to extend much beyond the bones, all of which would seem to militate against the probability of his having occupied a university chair of anatomy.

Franco was a profoundly religious man and this element of his character was doubtless responsible for his emigration from Provence. At that time the persecution of the Waldenses, to which sect he probably belonged, was in full swing, for it was in 1545 that the infamous massacres occurred, resulting from the edict of extirpation promulgated by Francis I. He was a Calvinist, as appears from the "Exhortation," with which he opens his second edition and which is, as Warmont says, a veritable profession of religious faith. It was natural then that he should resort to Switzerland, the home of John Calvin himself, who had become all-powerful at Geneva in 1541. The State of Berne had adopted the Calvinistic tenets, and Lausanne, which had been included within that state since 1536, became the home of our Provençal *émigré*. Here he entered into the service of the state as an official salaried surgeon, an evidence not only of the great confidence with which he was regarded by the public, but also of the character of his religious belief, for none but Calvinists were permitted to hold office in Berne. How long he remained in Switzerland we do not know, but in 1561, when he prepared his second edition, he had returned to Provence and was living at Orange, now in the department of Vaucluse. There was just at that time a period of comparative quiescence in religious persecution; although persecution of the Protestants had not entirely ceased, the religious wars did not break out until the following year. It is a reasonable conjecture, then, to suppose that Franco, feeling the end of his days drawing

near, took advantage of this period of comparative calm to revisit the scenes of his childhood and close both his work and his life there.

Franco travelled much from place to place in the pursuit of his calling, although Nicaise does not believe him to have been a professional peripatetic operator. Nevertheless he made frequent journeys to see patients or perform operations in the various towns of Switzerland, Bourgogne, and Provence. To one of these, a trip to "Sauagny" near "Neufchastel," "for hernias, hair-lips, and stones," he refers in his *Petit traité*.

After many years of practice, as we learn from the preface of his first edition, seeing that the branches of surgery, to which his life had been devoted, had been neglected by reputable authors, he conceived it to be his duty to lay before his fellow-practitioners the results of his experience; to disseminate a proper knowledge of the art of surgery for the benefit of "those who practice their profession with fidelity and fail only from ignorance," and to "repress the arrogance of the sharpers who deserve to be punished by the magistrates as robbers—the more as under the pretense of giving aid, they torture their poor patients and make them to die in misery." As the outcome of this sentiment he prepared his *Petit traité contenant une des parties principales de chirurgie, lesquelles les chirurgiens hernières exercent*, which was published at Lyons as a thin duodecimo of 144 pages by Antoine Vincent in 1556. This edition is one of the rarest of *incunabula*, and originals can only be secured with the greatest difficulty, and when obtained at all, at extravagant prices. The work has, however, been made available to students of the present day by two reprints, one appearing under the editorship of Professor Albert, of Innsbruck,¹ and accompanied by a biographical sketch, a critical

¹ *Petit Traité concernant une des parties principales de la chirurgie, laquelle les chirurgiens hernières exercent ainsé qu'il montré en la page suivante. Fait par PIERRE FRANCO, chirurgien de Lausanne. Lyon 1556. Neu herausgegeben und begleitet von einer Biographie und Würdigung Petr. Franco's nebst einer Vergleichung der zweiten Auflage von 1561, von Dr. ALBERT, Professor der Chirurgie in Innsbruck. Deutsches Archiv für Geschichte der Medicin und medicinische Geographie, Band IV, 1881, und Band V, 1882.*

study of the book and a comparison with the second edition; the other,¹ prepared by Dr. Warmont at the suggestion of Professor Verneuil, of Paris, was issued in 1884 in connection with the *Revue de Chirurgie*, of which Professor Verneuil was the editor-in-chief, and was preceded by a brief, but interesting preface prepared by him.

The second edition, which was practically a new work, founded upon the first, was published also at Lyons, but by Thibault Payan, a different publisher, as a 16mo of 554 pages, under the title of *Traité des hernies contenant une ample déclaration de toutes leurs espèces, et autres excellentes parties de la chirurgie, assavoir de la Pierre, des Cataractes des yeux, et autres maladies, desquelles comme la cure est périlleuse, aussi est-elle de peu d'hommes bien exercée: Avec leurs causes, signes, accidens, anatomie des parties affectes et leur entière guarison: par PIERRE FRANCO de Turriers en Provence, demeurant à présent à Orange*. This edition, also, is very rare, although not so nearly inaccessible as the first, and, at the suggestion of Professor Verneuil, a magnificent reprint² has been prepared by Professor Nicaise, of Paris, to whom we are indebted for his superb reprints of the works of Henri de Mondeville and Guy de Chauliac, and for invaluable researches into the early history of French surgery.

In the first edition Franco had no notion of preparing a textbook of surgery at large, but confined himself closely to the subjects indicated in his title. He gave us what he himself conceived and executed, uninfluenced by authority, and every line bears the stamp of originality. Guy de Chauliac is mentioned two or three times and Albucasis and Avicenna each once, but he gives no other indication of familiarity with surgical authors. The book is a simple recital of

¹ *Petit Traité contenant une des parties principales de chirurgie. Fait par PIERRE FRANCO*. Reimpression identique au texte primitif, avec les figures. Publiée par la *Revue de Chirurgie*, avec tirage à part, 8vo, pp. 92. Paris: F. Alcan, 1884.

² *Chirurgie de Pierre Franco de Turriers en Provence, composée en 1561, nouvelle édition avec une Introduction historique, une biographie et l'Histoire du Collège de Chirurgie*, par le Dr. E. NICAISE, Membre de l'Académie de Médecine, Professeur agrégé et Chirurgien de l'hôpital Laënnec, 1 vol., grand in-8° de 382—CLXIV pages, 42 figures. Paris, Felix Alcan editeur, 1895.

the methods and practices of the author, and is characterized by a simplicity and sincerity of diction that marks the work of a man accustomed rather to wield the scalpel than to handle the pen.

The second edition is far more pretentious than the first. It would seem as if Franco had been so spoiled by the success of the first, that his head had been puffed up with the notion of creating a great surgical monument like the *Grande Chirurgie* of Guy de Chauliac. But neither his tastes nor his training adapted him to such work. In the effort he lost his freshness of style and acquired stiffness and artificiality with a tendency to rely upon authority rather than upon experience. Instead of merely referring to three authorities and only in five places, he refers to fifty-three and in three hundred and fifty-six places. The most of the new material is obtained from other authors and the selections from Galen, Guy de Chauliac, Stephanus, Thierry de Hery, Ambroise Paré, and others can readily be distinguished in the text, for the joints are crude and the assimilation defective. There is a lack of logical sequence in the arrangement of the matter, the chapters on wounds and hare-lip, for example, being interpolated among those on tumors.

Franco's fame rests chiefly upon the fact that he performed the first recorded operation for the extraction of vesical calculus through the suprapubic abdominal wall. The operation was performed by him, however, as a forlorn hope, he fearing in common with his contemporaries that an incision of the body of the bladder would almost necessarily be fatal to the patient. Indeed, he warned surgeons against following his example, leaving it for Franciscus Roussetus, twenty years later in his "*Υστεροτομοτομίας*," to show, by its analogy to incision of the uterus in the Cæsarean operation, that division of the wall of the bladder was not fatal nor even dangerous. Roussetus may then be said to be the real father of the operation to which Franco's name has been attached. Franco's account of his case, which is practically the same in both editions, is as follows:

"It once came to pass that I wished to remove a stone from a child of ten years or thereabouts, but in spite of all my efforts, I

could not bring it down to the neck of the bladder. Seeing that the patient was very much exhausted by his sufferings, that the parents desired rather that he should die than live on in such agony, and that moreover I did not want it to be said that I gave up the case as impossible, although it was foolhardy, I determined to cut into the bladder from the pubis, a little to the left. This I did, cutting upon the stone which I had raised up with my fingers inserted into the fundament and held under control with the hand of an assistant, who compressed the belly down upon it, and so I took it out through the opening I cut. The stone was as large as an egg. And so the patient was cured without any drawback, and the wound was healed. However, I should not advise any person to operate thus, but rather to use the method devised by us, of which we have spoken."

The method "of which he had spoken" was a perineal section into the neck of the bladder with immediate removal of the stone if it were small and presented itself at the incision; but if it were large and there was danger of wounding the vesical wall,—which he considered dangerous, if not fatal,—or if it did not present itself at the opening, the patient was allowed to rest and recuperate for a day or two. The stone was then at a second sitting extracted with the forceps if small, or if large, broken into fragments with cutting forceps and removed piecemeal. This was lithotomy in two sittings, which, reinvented by Colot at the end of the seventeenth century, had great vogue. He rendered clear and precise the operation of lateral lithotomy on the guide, using a channelled sound, a double-edged knife, a gorgemet, and a double-crossed forceps of his own invention. He also invented cutting forceps for breaking stone in the bladder, when too large to be removed entire through the vesical neck. In the second edition he describes the median operation of Marianus Sanctus with great detail, giving five chapters to it,—a chapter to each step of the operation. He treated urethral calculus and had the advantage of Würtz in being familiar with the use of the catheter, in connection with which he was the first to describe catheterism by the *tour de maître*.

The works of Franco have been spoken of for three centuries as works on hernia, although, as is clearly stated in the title of the first edition, they are rather treatises "on those branches of surgery commonly practised by hernia surgeons," and include in the first edition the widely diverse topics of hernia, stone, cataract, hare-lip, amputations, pterygium, and tumors. In the second edition, in addition to extensively padding the subjects considered in the first, he added a section on anatomy, a book on venereal disease, a discussion of numerous other affections of the eye in addition to cataract and pterygium, a treatise upon obstetrics and gynæcology, and a copious antidotary.

Nevertheless, about one-half of the first edition was occupied with the subject of hernia, under which he included all scrotal and inguinal tumors,—hydrocele, sarcocele, varicocele, and humoral and gaseous tumors,—in addition to rupture proper, intestinal, omental, and bubonocoele. His operations for the relief of hernia proper were radical indeed. Using the word "didymis," for the "two tunics, which envelop the spermatic vessels, and their contents," he defined intestinal hernia as the descent of the intestines into the scrotum. To cure this, the ordinary operation was, after the patient had been "well purged under the direction of a physician," to make an incision at the most dependent part of the scrotum to ensure drainage. The intestines having been reduced and kept in place by an assistant pressing in the pubic region, the testicle was seized at the incision and removed together with as much of the didymis as possible. The stump was then firmly grasped by special clamps, while a ligature was passed through the middle of the didymis just above them, then, including half of the didymis, it was passed back and out upon the other side, and the two ends tied. The clamps were then loosened and the stump cauterized and allowed to drop back into the canal, the ends of the ligature hanging from the wound. The parts were then bandaged with a compress over the pubis, and the patient allowed to recover. In case of severe inflammation and the formation of "bad humors," free openings were made for drain-

age, and antidotes administered internally, lest "the poison mount to the heart and suffocate it."

A second method, which had the "great advantage of not requiring the removal of the testicle," consisted simply in drawing the didymis through an incision at the superior part of the scrotum, dividing it into four equal parts and ligating the middle ones. A third method was similar to the second except that the ligature was of gold wire and permitted to become encysted since it was a "friend of nature, like lead." This use of the metal suture is another little evidence of the coming of the aseptic era which was so long delayed, but which even in the sixteenth century and earlier cast its shadow before. Franco was the first to speak of crural hernia, and we owe to him the operation for irreducible hernia with or without opening the sac.

He devoted much space to a description of his method of couching for cataract, "with which he principally concerned himself," and to a discussion of the difference between hard and soft cataract. His procedure was simply to force the lens backward and downward into the vitreous with a needle, and to hold it down "during the time of saying the Lord's prayer two or three times or more as would seem expedient." He referred to the great amount of manual practice necessary to enable one to perform the operation deftly, and advised constant rehearsal upon the cadaver and on the eyes of animals, and acquiring facility with both hands.

Franco has by some been considered an independent inventor of podalic version, but the passage in his second edition referring to this procedure is clearly borrowed from Paré. He describes a new form of Cæsarean section, and gives the details of a procedure which may be considered as the first attempt at assisting delivery by means of forceps. The instrument was not applied upon the child, however, but was simply a form of cervical dilator.

He did not display the originality in the treatment of amputations that he showed in other parts of his book. Although Paré had popularized the ligature of vessels several years before, Franco still

clung to the actual cautery or boiling oil for checking hæmorrhage, although he controlled bleeding during the operation by a tight band encircling the limb an inch or two above the proposed line of incision. He performed a circular amputation, binding the patient firmly to the table and retracting the soft parts twice, once before applying the constricting band about the limb and once after section of the soft parts and before division of the bone, in order to increase the amount of flap.

While Franco was a man eminent for piety, his faith was not equal to the strain of admitting the assertion of many of his contemporaries that congenital deformities were visitations of Providence, and consequently an attempt to correct them a sinful interference with the purposes of the Almighty. "The opinion," says he, "that what God has given from birth cannot be cured, as Guido says, is not only wrong, but heretical. I have cured many by the help of God; wherefore I will shew how it is necessary to proceed." He treated hare-lip by freshening the edges of the fissure and drawing them together with two triangular pieces of adhesive plaster, which, adherent to each side, were so drawn as to bring the two edges in apposition and stitched together. Another plan was to pass needles through the flaps in the manner of hare-lip pins. He refers to double hare-lip under the name of hare-teeth. In this chapter he also details an interesting case of facial autoplasty for the repair of extensive sloughing involving both lips and both cheeks. He slashed the skin without carefully in such direction as would enable him to draw the margins of the opening together and, after refreshing the edges, to form them into a very respectable mouth.

Both of the works of Franco are adorned by rude cuts illustrating the various surgical instruments employed by the author. There are sixteen of these in the first edition and thirty-nine in the second. The latter also contains three comically crude representations of skeletons occupying various oratorical attitudes.

The personality and influence of both Würtz and Franco were largely overshadowed by that of Ambroise Paré, who, living contem-

poraneously with them, wielded the sceptre of surgical pre-eminence at Paris. Beginning his professional career as a barber-surgeon, he soon became a master-surgeon of the fraternity of St. Côme in Paris, and ultimately provost of the order; he became an army surgeon, remaining in the military service for a quarter of a century, and was finally taken into the personal service of the kings of France, being transmitted from monarch to monarch during four successive reigns as a "legacy of the crown." He was an observer and learned much by patient devotion to his patients; he strove to elevate the profession not only by influencing favorable legislation, but by making professional knowledge more accessible, producing numerous works in which he not only abstracted the work of other authors but commented upon it and illustrated it by observations of his own; he modified the treatment of wounds and suppressed the old methods of controlling hæmorrhage in favor of the ligature; he brought podalic version into general use; he was the first to extract loose cartilage from the knee-joint and the first to reduce dislocation of the shoulder by the heel in the axilla. His great faith in himself, justified, indeed, by his magnificent success, was illustrated by the motto of his great book, "*Labor improbus omnia vincit.*"

Würtz was the personal antipodes of Paré, and in this respect more like Franco, but the professional opposite of both. Unaggressive and retiring, working in a small and obscure arena, without powerful assistance of any kind, he was only persuaded to give his own experience to the world by the solicitations of a distinguished friend who had happened to become acquainted with his modest worth. Würtz was not a brilliant inventive genius, but a patient, plodding worker, of untiring industry, observing his patients conscientiously and devoting himself rather to the improvement of daily routine than to original invention. He was a great clinician and his special field was emergency surgery.

Franco was of a different type from either Paré or Würtz. While personally modest and retiring, he was professionally belligerent and progressive. A worker of remarkable originality, with no royal

patronage, with no university professorship, with none of the advantages to be derived from wealth or high social station, he achieved his position by force of sheer independence and sterling worth. His life was an embodiment of his own motto, "*Il faut endurer, pour durer.*" He was ready to endure all things for the good of his fellow-men and the advancement of his art. He separated himself even farther from tradition than Würtz and much beyond Paré. He discarded unguents and plasters in which his predecessors and even his contemporaries reposed all faith. He created operations; he invented instruments; he opened up a new field for legitimate surgical practice.

There was much that was alike and much that was dissimilar in the lives of Würtz and Franco. Both were men distinguished for piety, the latter was a religious refugee. Each passed his life in a limited field of labor, known only to his townsmen and neighbors, and both, by the publication of their work at its latter end, attained great renown. Both were without the assistance of royal, papal, or university patronage to which their great predecessors and contemporaries owed much of their success. Both conducted a crusade against the "abuseurs" and "coureurs," who, by their ignorance and hardihood, were casting so much discredit upon surgery. Würtz was a German, Franco a Frenchman, and each manifested the characteristics of his racial type. Würtz was plodding and industrious, Franco brilliant and original. Each was obscure in life, only to become illustrious in memory. Both were crude in pathology, insufficient in practice and unsatisfactory in result as compared with the elaborate surgery of the present day, but as compared with the past, the methods of each were like a step from the starlight into the dawn, and, standing in the penumbra of surgical progress, each contributed materially to the light of surgical knowledge which was to increase in volume and brilliancy throughout the illimitable future.

JAMES E. PILCHER.

