## Part I.—Original Articles.

# JEROME CARDAN: A STUDY IN PERSONALITY.

By G. A. Auden, M.A., M.D., Ph.D., F.R.C.P.

> "Jeronimus Cardanus, that famous Physician of Milan, a great enquirer of Truth, but too greedy a Receiver of it. He left many excellent discourses, Medical, Natural and Astrological; the most suspicious are those two he wrote by admonition in a dream, that is *De Subtilitate* and *Varietate Rerum*. Assuredly this learned man hath taken many things upon trust, and although he examined some hath let slip many others. He is of singular use unto a prudent Reader."—*Sir Thomas Browne, Pseudodoxia Epidemica, Bk. i, Chap. viii, 13.*

The chief interest of any autobiography depends upon the success with which the writer draws a picture of himself and reveals the development of his character, his orientation to the people amongst whom he has moved, and his relation to the events in which he has played his part. Such self-revelation is not common, and hence it is that but few autobiographical writings have more than a transient interest. Amongst these few, however, may be included the *De Vita Propriâ* of Jerome Cardan, which, together with the personal references scattered through many of his other books, offers an opportunity to trace the factors which went to mould his character and personality and to influence his outlook on life. Apart, therefore, from our interest in him as a man, the study of his life as revealed by himself is interesting in the light of modern psychology.

Jerome Cardan, Professor of Medicine at Pavia, enjoyed a wide reputation as a physician, a reputation which caused him to be summoned from Italy to Edinburgh for a consultation on the health of John Hamilton, Archbishop of St. Andrews. It was on this journey that he was consulted on the health of King Edward VI. His medical writings were much read in his time and are frequently quoted by Sir Thomas Browne. But this is not his only title to be remembered, for he was the leading mathematician of his time, and as such his memory is still perpetuated by "Cardan's Rule" for the solution of certain algebraical equations; and perhaps a still greater cause for remembrance, certainly by all who are interested in motors, is the "Cardan shaft" with its universal joint, of which he first described the mathematical principles.

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In an age of voluminous writings Cardan surpassed most of his contemporaries. His pen was never out of his hand, and according to his own statement in his *De Libris propriis* he published 139 books, and had in addition at the time of writing 111 manuscripts which had not been published.* But, with the possible exception of his *De Consolatione*, none of his books can compare in interest or pathos with his last work, *De Vita Propriâ*, written at the end of his long life, when he was bowed down by grief at the execution of his eldest son for murder.

The illegitimate son of an eccentric jurist and mathematician already advanced in years, he was born into the world in 1501, an unwanted child, whose mother had done her best to prevent his advent by taking drugs to procure abortion (*cf. De Utilitate*). The confinement was difficult and protracted, and he was at once put out to nurse. Within the first month of his life his troubles began, for his foster-mother died of plague. Steeped in the astrological lore of his time, he always believed that he had been born under an unlucky star, and that had it not been for the fortunate influence of the moon he must have been born a monster. The list of infantile complaints from which he suffered, and of which he gives a catalogue, shows clearly that, like his contemporary Paracelsus, he suffered from rickets, although this disease had not yet been described at the time. In his case the condition was doubtless due to the fact that he was not weaned until three years of age.

His weakness and delicacy, however, did not protect him from harsh and cruel treatment. His aunt, who lived in the home, for his father and mother had now married, was particularly cruel; indeed, he says, she must have been born without a gall-bladder, for her choleric temper could only have been due to the direct absorption of the gall into her blood. But in addition, throughout his childhood, there were constant bickerings and quarrels between his parents, such as could not fail to exercise a malign influence on a highly strung, nervous child. Added to this, his father, clever and unstable, was always in monetary difficulties, and constantly moving from one house to another. The boy had no companionship with other children of his own age, and thus was thrown entirely upon himself. Here, therefore, we have the factors which inevitably produced the nervous instability and the maladjustment to home environment which bore such bitter fruit in after years.

* In *Liber de Vita Propriâ*, cap. xlv, he gives a classified list of his writings, including mathematics (3), astronomy (10), physics (40) (this includes the *De Subtilitate*—22 books in one volume and *De Rerum Varietate*—17 books in one volume), moral (8), various "opuscula" (24), medical commentaries (52), dreams (4), theology (2), the art of medicine (47) and sundry others.

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Neglected and ill-treated as he was, and living as he did in a household which could scarcely be called a home, there is little cause for wonder that at the age of four or five years the sensitive lad began to suffer from a hallucinatory phantasmagoria, apparently of a somnambulistic character, for it chiefly occurred in the early morning hours. He describes processions of colourless ring-like figures rising from the right-hand side of his bed, also horses, houses, trees, musical instruments, etc. But the most constantly recurring vision was that of a cock with red wings and red comb, with a human voice, for which he listened with terrified expectancy.* There were also other threatening voices which frightened him. Cardan tells us that the mental agony and fright of this period of his life brought him to think of suicide—an impulse which appears to have recurred at other times in his life.

At the age of seven his father, presumably to save the expense of a servant, added to his son's troubles by making him trot about the streets with him carrying his bag of books and papers, until a serious illness supervened, which at last aroused in his parents some hitherto dormant sense of parental affection. The boy was formally dedicated, should he survive, to the tutelary protection of St. Jerome, whose name was taken as his Christian name. Released from his servile duties he grew up to adolescence untrained, sensitive, self-conscious and introspective, and ever conscious of the slur of his illegitimate birth, and though he was a lad of unusual quickness and intellectual precocity, his education was completely neglected. When a rich nephew of his father offered to settle money upon him to pay for an adequate education, his father summarily refused the offer. At this time Jerome went through the not uncommon experience of adolescence, a phase of religious emotion, and began to consider the question of becoming a monk. Doubtless one of the reasons for this plan was the thought that within the monastic walls he would have access to books and to the education which his father denied him. But a still more powerful emotional appeal was made to him by the death, at the age of thirty, of a relative, Nicolo Cardan, to whom he was much attached. This event prompted Jerome to make his first attempt at authorship—a treatise on immortality.

It was not until he was nineteen years of age that his father Fazio, who had only given him irregular instruction in mathematics and astrology, allowed him to become a serious student of Latin—the language which alone could throw open the entrance to the world of learning and the humanities. At the same time his capacity

* "Gallus quem timebam ne loqueretur humanâ voce, inde paulo post ita contingebat."

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for mathematics stirred him to attempt the authorship of two treatises which are interesting as showing the special bent of his mind for many years to come, *i.e.*, one on astronomical calculations, the other on the theory of chance in relation to card-playing. His love of gambling, which lasted throughout his life, no doubt dated from this period of repression, and it would appear that, added to his skill and knowledge of the mathematical aspects of gambling, the excitement which it provided offered an escape from reality and from his feelings of inferiority into a realm where the dice-box placed all on an equal footing. There was another outlet to his emotional energies in music,* for his mother had, unknown to his father, supplied the money for music lessons. The memory of his own sufferings as a child is revealed in some of the precepts to his children, *i.e.*, " Educate a bastard as if he were legitimate, for he is your own blood." " You owe to your children agreeable names, knowledge of a useful art, good manners, instruction in music, arithmetic and writing."

By nature timid, afraid of thunder, firearms, swords, swimming and riding, he found compensation in roaming about the streets at night, disguised and armed, despite the drastic prohibitions of the civic authorities. Here, indeed, is a good example of fantasy-building, wherein his conscious shrinking from danger and his lack of self-confidence found compensatory expression in the fantasy of being a bold and venturesome swashbuckler.

At length his father, to whom, rather than to his mother, he often shows affection, stirred by urgent representations of his friends and by the boy's own entreaties, enforced by the threat to run away from home if he did not have his way, consented to allow him to enter the university. Accordingly at nineteen years of age he entered the University of Pavia as a student of medicine. Here at last Jerome found freedom and the opportunity for self-expression which had hitherto been denied him. Reading, music, excursions into the country and fishing filled his days, and the gaming-table his evenings. His university career was successful and in due course he was ready to graduate in medicine. But here he was met by a sudden check to his ambitions, which profoundly influenced his future and once more brought him back to a state of morose introspection. He was rejected by the College of Physicians. The stigma of illegitimacy clung to him, together with, it is probable, an unsavoury reputation as a gambler. Moreover he had brought himself into the prominent notice of the University authorities by one of the most extraordinary actions of his life, the

* *De Vita Propriâ*, cap. lii, p. 219: " Lætus, voluptate deditus, musicæ præcipue."

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assumption of the Rectorship of the University in the previous year (1525). It was a time of great political and military disturbance, and the University had been closed for several years previously. There was accordingly a dearth of suitable candidates for the Rectorship, and it would appear that in the confusion of the times when the Rectorship was going a-begging, the opportunity for self-assertion which the appointment offered induced Cardan to put himself forward as a candidate. He was duly elected.* That the election was irregular in some way is shown by the fact that Cardan's name does not appear in the official record of Rectors, the years from 1508 to 1526 being left blank. From a common-sense point of view it was an extraordinarily foolish venture, and indeed Cardan says he was a fool to undertake it (*Stulte vero id egi*). He was a poor student, and the expenses for robes of office and for entertainments were heavy. The post, however, entitled the holder to proceed to the doctorate of his faculty without further trouble. It may be that the University authorities took the opportunity of showing their annoyance by rejecting the madcap student when he applied to be allowed to receive his doctorate. Be this as it may, he obtained his medical degree in the following year (1526). From his father he had learnt to take a keen interest in astrology, and his computation of his own horoscope led him to believe that he must die in middle life before he had been able to achieve that fame and immortality for which his restless spirit craved. This prospect of an early death filled his mind with haunting dread. Writing at the end of his life he shows a very natural misunderstanding of his real attitude of mind in his desire for the approbation of his fellow men. In the words of Sir Thomas Browne (*Hydrotaphia*, Cap. v): "To be content that times to come should only know there was such a man, not caring whether they knew more of him, was a frigid ambition in Cardan." † Though doubtless this statement of his motives expresses what Cardan believed to be the truth, for he is always extraordinarily frank in his self-criticism, all his actions show it to be false. It is clearly a rationalization in his old age, for never was a man more thirsty for fame and for the good report of his colleagues and successors in the world of letters. He had, moreover, another cause for mental distress at this time, a common cause of despondency amongst the unstable and neuropathic—the belief that he was impotent and physically unfitted for marriage.

Without any financial resources he was constrained to settle

* *De Vita Propriâ*, p. 12, "Sub anni xxiv finem, factus sum rector ejus academiæ; in fine sequentis Medicinæ Doctor."

† "Cuperem notum esse quod sim, non opto ut sciatur qualis sim."

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down to a country practice in the small town of Sacco, but he soon began to look around for a wider sphere in which to prove his talents. Accordingly in 1529 he made an attempt to migrate to Milan, where his mother was still living. Once more the opprobrium attached to his birth stood in his way, and his application to be enrolled in the College of Physicians of Milan met with a refusal.

Disappointed at this rebuff and wound to his pride he returned to Sacco, where he appears to have had a definite physical and mental breakdown. In fact the remark of his biographer Naudè, "*insaniente proximum vixisse*," is probably not altogether untrue. He gradually recovered his health, but seems to have neglected his practice in a devil-may-care reaction, and before long was considering marriage. Throughout his life Cardan had an implicit belief in the prognostic value of dreams, which he frequently describes in considerable detail, sometimes with sufficient precision to allow a reasonable interpretation in the light of modern psychological knowledge. In his later years he published a book on the interpretation of dreams. It was a dream which led him into marriage. He dreamt that he was in a beautiful garden, surrounded by a wall, full of delicate flowers and fruits. The gate was standing open, and just outside was a beautiful maiden dressed in white. He stepped outside and embraced her, but at his first kiss the gardener closed the gate and the two were left standing without, like Adam and Eve cut off from the beauties of Paradise. It seems a reasonable interpretation of the latent content of this dream as representing his release from the haunting dread of physical impotence, which he tells us had recently passed away—the garden with the walls and open gateway—coupled however with a feeling that marriage (he was now twenty-nine years of age) would not fully solve his conflicts, and in his then state of restricted income would be a further bar to the advancement of his ambitions as a physician.

Shortly after his garden dream he believed that he recognized in Lucia, the daughter of a new next-door neighbour, whose advent had at first greatly annoyed him, the girl of his dreams. He fell in love straightaway* and was duly married. Lucia proved a good wife to him despite his temper, irritability and general recklessness, sharing with him his poverty and anxieties for fifteen years, but dying before he had won a secure position. Cardan, looking back at the end of his life over all the troubles that his sons had brought him, somewhat harshly attributes all his ill-luck to his marriage: "*hoc incommodum omnium malorum quæ mihi in totâ vita acciderunt causa fuit*" (*De Vita Propriâ*, xxvi).

* *De Vita Propriâ*, cap. xxvi, p. 68: "Ab ea die cœpi non amare, sed ardere. O miser, melius esse mori quam sic vitam agere."

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When his wife had been dead a few years he once dreamt that he had married again, and that his late wife stood beside them both and asked for five masses to be said on her behalf. His dream wife disappeared and in her place appeared his mother; between the two dead women stood his eldest son as he was when seven years old at the time of his grandmother's death. Here it would appear the wish to marry again was set against the interests of his son, who was the dream-surrogate of himself and a reminiscence of his own misery and harsh treatment at seven years of age. In his precepts to his children he writes, "Never let your children have a step-mother; if you do never put faith in her as an accuser."

Shortly after his marriage he made a second attempt to secure admission to the Milanese College of Physicians, but again in vain. This experience and the pinch of poverty soon made it necessary for him to apply himself to practice in the country, where living and the necessaries of life were cheaper and the conditions of life more healthy than in the crowded tenements of Milan. Practice, however, in a country district which had been ravaged by war and pestilence offered but little pecuniary remuneration—in fact he states that in the whole of his nineteen months in Gallerate he only earned 25 crowns towards his house rent. His luck at the gaming table had deserted him, and he had diced away his wife's jewels and even their bed. Something must be done, and accordingly with his young wife and infant son Cardan once more moved into Milan, where their destitute state brought them at length into the Zenodochium, or casual wards of the workhouse. A small lectureship in geometry and astronomy, the endowment of which was in the gift of the Prefect of the Zenodochium, was ultimately secured for him.

Cardan was now thirty-three years of age, without prospects and with few friends, but still with the same overpowering ambition to show to the world the light of knowledge which he felt burnt within him. ("*Hoc unum sat scio, abeunte aetate me inextinguibili nominis immortalis cupiditate flagrasse.*") Gradually patients began to consult him, and the fame of several successful cases spread abroad, despite the attitude of the regular physicians of the College. As soon as he had found his feet he found means to get his own back upon his professional brethren by the publication of a book which held them up to satire and derision—*Bad Practice in Modern Medicine*, or, as it might be translated, "Errors in Modern Medical Practice." Herein he pilloried the methods of his colleagues without mercy. It was a bold stroke, which certainly served its purpose, if this was to bring him before the public eye, for it was eagerly read by everyone. As a weapon of vengeance, however, it proved to be a

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two-edged sword, for the hurry with which it had been written (Cardan says it was written in fifteen days) and the carelessness of typesetting and lack of correction caused numerous errors to appear, which gave his enemies an opportunity, which they were not slow to seize, for turning the tables upon him. Cardan was greatly disheartened at the result of his venture as an author, more especially at the counter-attack made upon his own capacities as a physician and upon his mental condition.* A new avenue of fame must therefore be sought, and accordingly he turned once more to his earlier studies of astronomy and mathematics, and began to write the book which was soon to earn for him a European reputation and an assured place in the Temple of Fame, his *Practica Arithmetica*. He held a lectureship in mathematics, and had not his enemies derided him by saying that he was only fit to teach mathematics? Then on mathematics he would write, and prove his genius to the world! It is noteworthy that at this time, taking Cicero as his model, he wrote his *De Consolatione*, the only book of his that has ever been translated into English—a kind of personal soliloquy, the writing of which was probably in some measure an attempt towards the sublimation of his own thwarted ambitions. If read from this point of view the book will be found to possess a good deal of psychological interest. In the opening chapter he writes, "I know not what benefits others may reap by this my labour; as to myself (for whom I chiefly designed this book) the considerations contained therein have abundantly profited me. . . . What wise man will torment himself in adversity, considering how vain, short and uncertain the life of man is?" (translation, London, 1683). The book is no mere sententious compilation, but has the ring of personal experience, if not of conviction, and comfort. Be this as it may, his fame as a mathematical teacher spread quickly and brought him several notable pupils, while a further series of successful cures brought at length the distinction which he had so long coveted—admission to the College of Physicians, which gave him a place amongst the recognized physicians, with full right to practise. His *Practical Arithmetic* was published at Nuremberg in 1539. Its value was at once recognized, but it involved Cardan in new difficulties in that it brought him into sharp controversy with another mathematician, Tartaglia, and gave his enemies an opportunity to bring a charge of bad faith against him. The controversy is the old problem of priority of discovery. Tartaglia had discovered a method of solving certain cubic equations, and Cardan, naturally anxious to include the latest work in his

* "Dicebant numquid modo dubitatio hunc insanire. Itaque merito qui tot insanientibus contradicere niterer, insanire visus sum."

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text-book, attempted, with ultimate success, to draw from Tartaglia his carefully guarded secret method. This he did on promising to give due credit to the discoverer. He kept his promise, but recognized that his rival's solution was less generally applicable and therefore less valuable than his own solution, together with that of one of his pupils, Ferrari, who had discovered a rule of general application to problems of this character. Cardan, however, had not touched upon Tartaglia's rule in his *Arithmetic*, having reserved it for use in a subsequent work on Algebra. Tartaglia accused Cardan of a breach of faith in no measured terms, though it appears that Cardan may be acquitted of conscious double-dealing in the matter.

His greatest work, *The Book of the Great Art*, was published in 1546, and marks a real advance in the history of mathematics. While acknowledging his obligations to Tartaglia as to others, Cardan does not definitely give him credit for this particular discovery. Doubtless the temptation to seek fame for an original discovery was a strong one, and the immoderate invective he had received from Tartaglia would not dispose him to be meticulously fair to his rival, but there is little doubt that Cardan and his pupils had advanced this particular branch of algebra very considerably beyond the actual point where Tartaglia had left it. Honours now came thick and fast. He was made Rector of the Milan College of Physicians in 1541, and two years later became Professor of Medicine in the University of Pavia, which, owing to the disturbed state of the country, had been transferred to Milan. He migrated to Pavia and continued his teaching there when the University returned to its own city. He now received two offers which must have flattered his self-esteem: the first was to enter the service of the Pope; the second, conveyed to him by the anatomist Vesalius, was an invitation to become physician to the King of Denmark. Cardan declined both offers. Some years later occurred what is to us the most interesting incident in his varied career. In 1551 John Hamilton, Archbishop of St. Andrews, was suffering from an affection of the lungs, the description of which points to asthma or emphysema. He was advised by his resident French physician, Cassanate, to seek the advice of Cardan. The consultation was finally arranged, and in the following year Cardan set out on his long and perilous journey from Milan to Edinburgh. Here he stayed for three months (June to September) in 1552, and though he was no chronicler of sights and scenes, he has left scattered through his published writings a certain number of his impressions and observations. He notes the large flocks of rooks and the collective efforts to reduce their numbers, the fine wool of the sheep, and their security from the attacks of wolves, which by this time had

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been exterminated; also the absence of snakes. He notes also the variety of semi-precious stones found in Scotland.* It is, however, disappointing that he tells us so little of his journey from the coast to Edinburgh, though he probably travelled along the Great North Road through York.

Cardan's treatment of the Archbishop was remarkably successful, for the latter lived nineteen years longer, only to be hanged at Stirling in 1571. Before he left Scotland Cardan was consulted by many notables and earned large fees, and on his return journey he stayed in London in the house of Sir John Cheke. Here he was consulted upon the health of King Edward VI, who had recently suffered from measles and smallpox. He gives a very interesting account of his conversation with the boy King, who showed a great interest in astronomy and asked a number of questions about the nature of comets. Cardan was sanguine enough to cast the King's horoscope and to predict a long life—a prognosis which did more justice to his political prudence than to his astrological acumen, for the King died six months later. Cardan felt it incumbent upon himself to publish subsequently a memorandum on the reasons for his prognosis.†

His return to Italy was a triumphal procession, and the ambition of his life to be acclaimed the leading physician in Europe were abundantly realized. His practice amongst the nobility and notables increased, and he prospered exceedingly. To this period belongs the famous controversy with Julius Cæsar Scaliger, who, taking himself seriously as the " big noise " in the academic word, trounced Cardan's encyclopædic book *De Subtilitate* as a farrago of rubbish. Cardan treated the onslaught with silent contempt. Scaliger, hearing that Cardan had died from annoyance, proceeded to publish an effusive panegyric on his late rival, and became a laughing stock to the rest of the world. Sir Thomas Browne

* *De Subtilitate*, Lib. x, p. 384 (Leyden, 1584).

† His horoscope of King Henry VIII, published with the rest in his *De Exemplis Centum Geniturarum*, is a good example of his astrological activities: " 1491 die 27 Junii ho. 22, mi. 40 post-meridionem. Inclytus vir, ut ex stellarum positione apparet. Sol cum Apolline, regiumque plane animum magnitudine deceruit, violentia plusquam regium. Chronocratorem Solem habet. Nemo plures experietur in regno turbas." Butler, in his *Hudibras*, alludes to Cardan's astrological interest as follows:

"Cardan believes great states depend
Upon the tip of the Bear's end,
And as she whisks it t'wards the sun,
Strews mighty empires up and down."

A reference to Cardan by Sir Thomas Browne (*Pseudodoxia Epidemica*, Bk. vi, Chap. vii) makes this quotation from Butler more clear: "Some have therefore forsaken this refuge of the sun, and to salve the effect have recurred unto the influence of the stars, making their activities National, and appropriating their powers unto particular regions. So Cardan conceiveth the tail of Ursa Major peculiarly respecteth Europe."



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mentions this rivalry between the two scholars in his *Christian Morals* (Pt. ii, §2): "If Cardan saith that a parrot is a beautiful bird, Scaliger will set his wits o' work to prove it a deformed animal."

He who had suffered so much at the hand of Fortune now seemed to be the favourite of that fickle deity. But "the little cloud, no bigger than a man's hand" now began to appear, and that in his own household. Cardan had two sons, Gianbatista and Aldo, and a daughter Clara, who married well, and except for her childlessness never gave her father any trouble. The behaviour of both sons, however, caused their father much anxiety, and he was continually called upon to get them out of foolish and reprehensible scrapes. Their mother had been dead for some years. He had already cast his own horoscope, in which he found that "the nativities of my sons promise me much good and little harm."* The wish was clearly father to the thought, and he poured out his affection upon his reprobate sons in the attempt to make decent men of them. But his own inherent instability showed itself in a still more pronounced form in his boys, and his inveterate addiction to gambling can hardly have been a satisfactory example to them. The elder boy, after several failures, finally qualified in medicine, but failed to make any success of his profession. Like his father, he was particularly fond of music. Without telling his father, Gianbatista was secretly married to a young woman of worthless character. Cardan broke off all relations with them, but when a child was born to the couple, who, having sold or pawned all their possessions, were living in great poverty, his affection for his son overpowered his anger and he took upon himself their support and maintenance. But marriage did not wean the wife from her previous mode of life, and quarrels were constant. When a second child was born the mother told her husband that he was not the father of either of her children. This was the last straw, and Gianbatista cast about for means to rid himself of the incubus which he had bound to himself. In an incredibly foolish manner, and with but little attempt to conceal his designs, he proceeded to murder her by giving her a piece of poisoned cake. His younger brother Aldo was staying in the house and it is quite possible that he was privy to the murder; in any case both brothers were duly arrested. The charge against the younger prisoner was, however, subsequently dropped. Cardan, who was still Professor of Medicine at Pavia, on the receipt of the news rushed back to Milan to arrange for the defence. He threw all his energies, resources and professional influence into the struggle—a struggle all the more hopeless because the prisoner had already

* *Genituarum exemplar*, p. 122.

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confessed not only to the deed itself, but to two previous unsuccessful attempts. The arguments which his father put forward at the trial are strangely casuistic. One of these is curious in that it seems to suggest that Gianbatista was recognized as being " simple " and that the fact was notorious. " He was so simple in fact that he had no more prudence than a boy of ten years old." His want of prudence as evidenced by the egregious folly of his marriage and his failure in his profession were proofs of this simplicity. Certainly the whole setting of the crime, the placing of the arsenic in the cake after having got his servant to procure it for him and the absence of any attempt to destroy the evidence against himself seems to point to a degree of fatuousness amounting to feeble-mindedness. Another fact pointing in the same direction and indicative of a complete failure to appreciate the gravity of his position was his petition to his father to go bail for him in 10,000 gold crowns in order that he might be allowed two hours *exeat* from prison to attend a race meeting. The evidence against the husband was too clear to be rebutted and he was duly condemned and executed.

From this time forth Cardan was a broken man, ruined in spirit, in resources and in reputation, and shunned by his colleagues and former friends. Always inclined to superstitions in relation to dreams and omens, he became more and more the slave of superstitions of this kind, and now in association therewith developed ideas of persecution. The simplest actions of others were translated into fancied attempts upon his life. His moroseness and harshness of character and outspoken manners can never have made him popular, but there is no reason to suppose that there was any real attempt to bring about his death, although undoubtedly scurrilous attacks were made upon his morals and personal character. Moreover, his surviving son Aldo continued his worthless career until, after several periods of imprisonment, he was finally exiled from the city.

In his distress of soul he admits that the behaviour of his sons reflected their father's defects and failures as a parent. As is so often the case with ambitious fathers, he had hoped his children might prove surrogates for himself, and that in their successes he might see himself mirrored, in an image undimmed by his own consciousness of failure. Affectionate after a fashion as he was, it seems probable that behind the natural grief at the death under such circumstances of his eldest son, and the graceless behaviour of his younger son, was the unconscious knowledge of personal failure in and through them—the longing for " what might have been " which is ever the cry of the human heart in distress. Such

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was his mental distress at times, he tells us, that he resorted to flagellation. He notes how great is the emotional relief which comes from an outflow of tears. His eccentricity showed itself in many ways, such as in the keeping of all sorts of queer pets in the house, as he could never induce himself to get rid of them, "goats, lambs, rabbits, hares, storks, so that they pollute the whole house." Doubtless some of his eccentricity was a pose which earned for him the notoriety for which he craved. He devotes a chapter to a description of his own character, which is nothing if not frank. He calls himself irascible, simple, lascivious, harsh, pertinacious, contentious, imprudent, despising riches, but seeking fame after death.*

Resigning his professorship at Pavia in the expectation of being appointed Professor at the newly constituted University of Bologna —an expectation which was but tardily realized—Cardan turned more and more to his own inner thoughts, and once more found in philosophy that comfort which the world denied him.† To this period of his life belong most of his philosophical works, especially *Theonoston*, including sections on tranquillity, the prolongation of life, contemplation, and the life and felicity of the soul after death. His book *De Usu Adversitatis* closes with the story of his son and of his sad fate, together with the defence which he had prepared for the trial, and he adds as a pathetic memorial of his blighted hopes and aspirations a fragment of a medical thesis by his son. Cardan's father had always believed that he had a dæmon or familiar spirit which directed his actions and life, and in his later years Cardan himself came to believe that he, too, had a dæmon, like that of Socrates, "a great, powerful and a rare one," which had taken over the entire governance of his life. A report which particularly annoyed him at the time, probably because of its half truth, was that he was a madman. Though he was always careful to avoid trouble by submitting his works to the judgment of the Council at Rome, something in his writings or his statements must have given a handle to his enemies, for suddenly at the age of seventy he was thrown into prison on some charge of impiety or blasphemy. After a year's imprisonment he was released, but was forbidden to teach or to publish further works. His life-long addiction to writing could not be so easily repressed, and the last five years of his life he spent in

* "Gloriæ post obitum cultor. Natura ad omne vitium pronus, præter ambitionem agnosco imperitiam meam si quis alius" (*De Vita Propriâ*, cap. xiii, p. 41).

† He seems to have been strongly drawn to the study of Plotinus. Thus Burton (*Anatomy of Melancholy*): "Cardan in his 16th book of Subtleties reckons up twelve super eminent acute philosophers for subtlety and wisdom . . . but his triumviri terrarum far beyond the rest are Ptolemæus, Plotinus, Hippocrates." I cannot, however, trace this specific reference in the *De Subtilitate*.

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working over the material contained in his store of manuscripts, destroying many and incorporating much into his last books. To these he devoted a special volume, the *De Libris Propriis*. To this period also belongs the autobiography, from which the material of this paper has been taken, the *De Vita Propriâ*. Fortune, however, shone upon him at the last, for the liberality of the Pope supplied a pension in place of the means and position which he had lost, and he continued to live in Rome until his death at the age of seventy-five. By his will, which he gives in chapter xxxvi of his *Life*, he left his property to his grandson Fazio and his heirs, with directions that his books should be edited and printed. Failing succession, his house in Bologna was to pass into the possession of the University and to be called the Cardan College (Collegium Cardanorum). A Frenchman, M. de Thou, has left an account of the impression which he gave as he walked about the streets of Rome, "strangely dressed and generally described as a madman of impious audacity who had attempted to subject to the stars the Lord of the stars, and cast the horoscope of Our Saviour."

Such was the current idea of the man whose fame as a mathematician still remains, and who, as a physician, had earned a reputation throughout Europe greater than had been ever gained by any other practitioner of the art of medicine.

It has been necessary to enter into details somewhat fully in order to be in a position to appreciate the motives and underlying forces which moulded his life. As has been stated earlier in this paper, the key to the whole outlook on life and to the actions, successes and failures of Jerome Cardan appears to be the strongly marked inferiority complex, which had been so forcibly impressed upon him in his early years. His life illustrates very clearly how diverse the manifestations of such a complex may be, especially when coupled with an inherited instability of mind.

Two lives of Cardan have been published in English, to both of which this paper is greatly indebted, the first, in two volumes, by Henry Morley, published in 1854, the second by W. G. Waters, published in 1898. Although both of these lives give much information concerning his mental development, both are devoted rather to the events of his life and the part he played in them than to a psychological study of his personality. The edition of the *De Vita Propriâ* used for this paper is that issued by Gabriel Naudè, Amsterdam, 1654; the *De Subtilitate* used is the edition published at Leyden, 1580.

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