

subject, slightly varied, continued to hold his interest, and it is quite possible that he was as little successful in his cherished art in the primary sexual sense as in his desires for mechanical matters, that both wishes were denied to him.

As a matter of fact the great Leonardo remained infantile in some ways throughout his whole life; it is said that all great men retain something of the infantile. As a grown up he still continued playing, which sometimes made him appear strange and incomprehensible to his contemporaries. When he constructed the most artistic mechanical toys for court festivities and receptions we are dissatisfied thereby because we dislike to see the master waste his power on such petty stuff. He himself did not seem averse to giving his time to such things. Vasari reports that he did similar things even when not urged to it by request: "There (in Rome) he made a doughy mass out of wax, and when it softened he formed thereof very delicate animals filled with air; when he blew into them they flew in the air, and when the air was exhausted they fell to the ground. For a peculiar lizard caught by the wine-grower of Belvedere Leonardo made wings from skin pulled off from other lizards, which he filled with mercury so that they moved and trembled when it walked; he then made for it eyes, a beard and horns, tamed it and put it in a little box and terrified all his friends with it." [72] Such playing often served him as an expression of serious thoughts: "He had often cleaned the intestines of a sheep so well that one could hold them in the hollow of the hand; he brought them into a big room, and attached them to a blacksmith's bellows which he kept in an adjacent room, he then blew them up until they filled up the whole room so that everybody had to crowd into a corner. In this manner he showed how they gradually became transparent and filled up with air, and as they were at first limited to very little space and gradually became more and more extended in the big room, he compared them to a genius." [73] His fables and riddles evince the same playful pleasure in harmless concealment and artistic investment, the riddles were put into the form of prophecies; almost all are rich in ideas and to a remarkable degree devoid of wit.

The plays and jumps which Leonardo allowed his phantasy have in some cases quite misled his biographers who misunderstood this part of his nature. In Leonardo's Milanese manuscripts one finds, for example, outlines of letters to the "Diodario of Sorio (Syria), viceroy of the holy Sultan of Babylon," in which Leonardo presents himself as an engineer sent to these regions of the Orient in order to construct some works. In these letters he defends himself against the reproach of laziness, he furnishes geographical descriptions of cities and mountains, and finally discusses a big elementary event which occurred while he was there. [74]

In 1881, J. P. Richter had endeavored to prove from these documents that Leonardo made these traveler's observations when he really was in the service of the Sultan of Egypt, and that while in the Orient he embraced the Mohammedan religion. This sojourn in the Orient should have taken place in the time of 1483, that is, before he removed to the court of the Duke of Milan. However, it was not difficult for other authors to recognize the illustrations of this supposed journey to the Orient as what they really were, namely, phantastic productions of the youthful artist which he created for his own amusement, and in which he probably brought to expression his wishes to see the world and experience adventures.

A phantastic formation is probably also the "Academia Vinciana," the acceptance of which is due to the existence of five or six most clever and intricate emblems with the inscription of the Academy. Vasari mentions these drawings but not the Academy. [75] Müntz who placed such ornament on the cover of his big work on Leonardo belongs to the few who believe in the reality of an "Academia Vinciana."

It is probable that this impulse to play disappeared in Leonardo's maturer years, that it became discharged in the investigating activity which signified the highest development of his personality. But the fact that it continued so long may teach us how slowly one tears himself away from his infantilism after having enjoyed in his childhood supreme erotic happiness which is later unattainable.

It would be futile to delude ourselves that at present, readers find every pathography unsavory. This attitude is excused with the reproach that from a pathographic elaboration of a great man one never obtains an understanding of his importance and his attainments, that it is therefore useless mischief to study in him things which could just as well be found in the first comer. However, this criticism is so clearly unjust that it can only be grasped when viewed as a pretext and a disguise for something. As a matter of fact pathography does not aim at making comprehensible the attainments of the great man; no one should really be blamed for not doing something which one never promised. The real motives for the opposition are quite different. One finds them when one bears in mind that biographers are fixed on their heroes in quite a peculiar manner. Frequently they take the hero as the object of study because, for reasons of their personal emotional life, they bear him a special affection from the very outset. They then devote themselves to a work of idealization which strives to enroll the great men among their infantile models, and to revive through him, as it were, the infantile conception of the father. For the sake of this wish they wipe out the individual features in his physiognomy, they rub out the traces of his life's struggle with inner and outer resistances, and do not tolerate in him anything of human weakness or imperfection; they then give us a cold, strange, ideal form instead of the man to whom we could feel distantly related. It is to be regretted that they do this, for they thereby sacrifice the truth to an illusion, and for the sake of their infantile phantasies they let slip the opportunity to penetrate into the most attractive secrets of human nature.[76]

Leonardo himself, judging from his love for the truth and his inquisitiveness, would have interposed no objections to the effort of discovering the determinations of his psychic and intellectual development from the trivial peculiarities and riddles of his nature. We respect him by learning from him. It does no injury to his greatness to study the sacrifices which his development from the child must have entailed, and to the compile factors which have stamped on his person the tragic feature of failure.

Let us expressly emphasize that we have never considered Leonardo as a neurotic or as a "nervous person" in the sense of this awkward term. Whoever takes it amiss that we should even dare apply to him viewpoints gained from pathology, still clings to prejudices which we have at present justly given up. We no longer believe that health and disease, normal and nervous, are sharply distinguished from each other, and that neurotic traits must be judged as proof of general inferiority. We know to-day that neurotic symptoms are substitutive formations for certain repressive acts which have to be brought about in the course of our development from the child to the cultural man, that we all produce such substitutive formations, and that only the amount, intensity, and distribution of these substitutive formations justify the practical conception of illness and the conclusion of constitutional inferiority. Following the slight signs in Leonardo's personality we would place him near that neurotic type which we designate as the "compulsive type," and we would compare his investigation with the "reasoning mania" of neurotics, and his inhibitions with the so-called "abulias" of the latter.

The object of our work was to explain the inhibitions in Leonardo's sexual life and in his artistic activity. For this purpose we shall now sum up what we could discover concerning the course of his psychic development.

We were unable to gain any knowledge about his hereditary factors, on the other hand we recognize that the accidental circumstances of his childhood produced a far reaching disturbing effect. His illegitimate birth deprived him of the influence of a father until perhaps his fifth year, and left him to the tender seduction of a mother whose only consolation he was. Having been kissed by her into sexual prematurity, he surely must have entered into a phase of infantile sexual activity of which only one single manifestation was definitely evinced, namely, the intensity of his infantile sexual investigation. The impulse for looking and inquisitiveness were most strongly stimulated by his impressions from early childhood; the enormous mouth-zone received its accentuation which it had never given up. From his later contrasting behavior, as the exaggerated sympathy for animals, we can conclude that this infantile period did not lack in strong sadistic traits.

An energetic shift of repression put an end to this infantile excess, and established the dispositions which

became manifest in the years of puberty. The most striking result of this transformation was a turning away from all gross sensual activities. Leonardo was able to lead a life of abstinence and made the impression of an asexual person. When the floods of pubescent excitement came over the boy they did not make him ill by forcing him to costly and harmful substitutive formations; owing to the early preference for sexual inquisitiveness, the greater part of the sexual needs could be sublimated into a general thirst after knowledge and so elude repression. A much smaller portion of the libido was applied to sexual aims, and represented the stunted sexual life of the grown up. In consequence of the repression of the love for the mother this portion assumed a homosexual attitude and manifested itself as ideal love for boys. The fixation on the mother, as well as the happy reminiscences of his relations with her, was preserved in his unconscious but remained for the time in an inactive state. In this manner the repression, fixation, and sublimation participated in the disposal of the contributions which the sexual impulse furnished to Leonardo's psychic life.

From the obscure age of boyhood Leonardo appears to us as an artist, a painter, and sculptor, thanks to a specific talent which was probably enforced by the early awakening of the impulse for looking in the first years of childhood. We would gladly report in what way the artistic activity depends on the psychic primitive forces were it not that our material is inadequate just here. We content ourselves by emphasizing the fact, concerning which hardly any doubt still exists, that the productions of the artist give outlet also to his sexual desire, and in the case of Leonardo we can refer to the information imparted by Vasari, namely, that heads of laughing women and pretty boys, or representations of his sexual objects, attracted attention among his first artistic attempts. It seems that during his flourishing youth Leonardo at first worked in an uninhibited manner. As he took his father as a model for his outer conduct in life, he passed through a period of manly creative power and artistic productivity in Milan, where favored by fate he found a substitute for his father in the duke Lodovico Moro. But the experience of others was soon confirmed in him, to wit, that the almost complete suppression of the real sexual life does not furnish the most favorable conditions for the activity of the sublimated sexual strivings. The figurativeness of his sexual life asserted itself, his activity and ability to quick decisions began to weaken, the tendency to reflection and delay was already noticeable as a disturbance in *The Holy Supper*, and with the influence of the technique determined the fate of this magnificent work. Slowly a process developed in him which can be put parallel only to the regressions of neurotics. His development at puberty into the artist was outstripped by the early infantile determinant of the investigator, the second sublimation of his erotic impulses turned back to the primitive one which was prepared at the first repression. He became an investigator, first in service of his art, later independently and away from his art. With the loss of his patron, the substitute for his father, and with the increasing difficulties in his life, the regressive displacement extended in dimension. He became "*impacientissimo al pennello*" (most impatient with the brush) as reported by a correspondent of the countess Isabella d'Este who desired to possess at any cost a painting from his hand.[77] His infantile past had obtained control over him. The investigation, however, which now took the place of his artistic production, seems to have born certain traits which betrayed the activity of unconscious impulses; this was seen in his insatiability, his regardless obstinacy, and in his lack of ability to adjust himself to actual conditions.

At the summit of his life, in the age of the first fifties, at a time when the sex characteristics of the woman have already undergone a regressive change, and when the libido in the man not infrequently ventures into an energetic advance, a new transformation came over him. Still deeper strata of his psychic content became active again, but this further regression was of benefit to his art which was in a state of deterioration. He met the woman who awakened in him the memory of the happy and sensuously enraptured smile of his mother, and under the influence of this awakening he acquired back the stimulus which guided him in the beginning of his artistic efforts when he formed the smiling woman. He painted *Monna Lisa*, *Saint Anne*, and a number of mystic pictures which were characterized by the enigmatic smile. With the help of his oldest erotic feelings he triumphed in conquering once more the inhibition in his art. This last development faded away in the obscurity of the approaching old age. But before this his intellect rose to the highest capacity of a view of life, which was far in advance of his time.

In the preceding chapters I have shown what justification one may have for such representation of Leonardo's

course of development, for this manner of arranging his life and explaining his wavering between art and science. If after accomplishing these things I should provoke the criticism from even friends and adepts of psychoanalysis, that I have only written a psychoanalytic romance, I should answer that I certainly did not overestimate the reliability of these results. Like others I succumbed to the attraction emanating from this great and mysterious man, in whose being one seems to feel powerful propelling passions, which after all can only evince themselves so remarkably subdued.

But whatever may be the truth about Leonardo's life we cannot relinquish our effort to investigate it psychoanalytically before we have finished another task. In general we must mark out the limits which are set up for the working capacity of psychoanalysis in biography so that every omitted explanation should not be held up to us as a failure. Psychoanalytic investigation has at its disposal the data of the history of the person's life, which on the one hand consists of accidental events and environmental influences, and on the other hand of the reported reactions of the individual. Based on the knowledge of psychic mechanisms it now seeks to investigate dynamically the character of the individual from his reactions, and to lay bare his earliest psychic motive forces as well as their later transformations and developments. If this succeeds then the reaction of the personality is explained through the coöperation of constitutional and accidental factors or through inner and outer forces. If such an undertaking, as perhaps in the case of Leonardo, does not yield definite results then the blame for it is not to be laid to the faulty or inadequate psychoanalytic method, but to the vague and fragmentary material left by tradition about this person. It is, therefore, only the author who forced psychoanalysis to furnish an expert opinion on such insufficient material, who is to be held responsible for the failure.

However, even if one had at his disposal a very rich historical material and could manage the psychic mechanism with the greatest certainty, a psychoanalytic investigation could not possibly furnish the definite view, if it concerns two important questions, that the individual could turn out only so and not differently. Concerning Leonardo we had to represent the view that the accident of his illegitimate birth and the pampering of his mother exerted the most decisive influence on his character formation and his later fate, through the fact that the sexual repression following this infantile phase caused him to sublimate his libido into a thirst after knowledge, and thus determined his sexual inactivity for his entire later life. The repression, however, which followed the first erotic gratification of childhood did not have to take place, in another individual it would perhaps not have taken place or it would have turned out not nearly as profuse. We must recognize here a degree of freedom which can no longer be solved psychoanalytically. One is as little justified in representing the issue of this shift of repression as the only possible issue. It is quite probable that another person would not have succeeded in withdrawing the main part of his libido from the repression through sublimation into a desire for knowledge; under the same influences as Leonardo another person might have sustained a permanent injury to his intellectual work or an uncontrollable disposition to compulsion neurosis. The two characteristics of Leonardo which remained unexplained through psychoanalytic effort are first, his particular tendency to repress his impulses, and second, his extraordinary ability to sublimate the primitive impulses.

The impulses and their transformations are the last things that psychoanalysis can discern. Henceforth it leaves the place to biological investigation. The tendency to repression, as well as the ability to sublimate, must be traced back to the organic bases of the character, upon which alone the psychic structure springs up. As artistic talent and productive ability are intimately connected with sublimation we have to admit that also the nature of artistic attainment is psychoanalytically inaccessible to us. Biological investigation of our time endeavors to explain the chief traits of the organic constitution of a person through the fusion of male and female predispositions in the material sense; Leonardo's physical beauty as well as his left-handedness furnish here some support. However, we do not wish to leave the ground of pure psychologic investigation. Our aim remains to demonstrate the connection between outer experiences and reactions of the person over the path of the activity of the impulses. Even if psychoanalysis does not explain to us the fact of Leonardo's artistic accomplishment, it still gives us an understanding of the expressions and limitations of the same. It does seem as if only a man with Leonardo's childhood experiences could have painted *Monna Lisa* and *Saint Anne*, and

could have supplied his works with that sad fate and so obtain unheard of fame as a natural historian; it seems as if the key to all his attainments and failures was hidden in the childhood phantasy of the vulture.

But may one not take offense at the results of an investigation which concede to the accidents of the parental constellation so decisive an influence on the fate of a person, which, for example, subordinates Leonardo's fate to his illegitimate birth and to the sterility of his first step-mother Donna Albiera? I believe that one has no right to feel so; if one considers accident as unworthy of determining our fate, it is only a relapse to the pious aspect of life, the overcoming of which Leonardo himself prepared when he put down in writing that the sun does not move. We are naturally grieved over the fact that a just God and a kindly providence do not guard us better against such influences in our most defenseless age. We thereby gladly forget that as a matter of fact everything in our life is accident from our very origin through the meeting of spermatozoa and ovum, accident, which nevertheless participates in the lawfulness and fatalities of nature, and lacks only the connection to our wishes and illusions. The division of life's determinants into the "fatalities" of our constitution and the "accidents" of our childhood may still be indefinite in individual cases, but taken altogether one can no longer entertain any doubt about the importance of precisely our first years of childhood. We all still show too little respect for nature, which in Leonardo's deep words recalling Hamlet's speech *"is full of infinite reasons which never appeared in experience."*[78] Every one of us human beings corresponds to one of the infinite experiments in which these "reasons of nature" force themselves into experience.

THE END

FOOTNOTES:

[1] In the words of J. Burckhard, cited by Alexandra Konstantinowa, *Die Entwicklung des Madonnentypus* by Leonardo da Vinci, Strassburg, 1907.

[2] *Vite*, etc. LXXXIII. 1550-1584.

[3] *Traktat von der Malerei*, new edition and introduction by Marie Herzfeld, E. Diederichs, Jena, 1909.

[4] Solmi. *La resurrezione dell' opera di Leonardo* in the collected work; Leonardo da Vinci. *Conferenze Florentine*, Milan, 1910.

[5] *Scognamiglio Ricerche e Documenti sulla giovinezza di Leonardo da Vinci*. Napoli, 1900.

[6] W. v. Seidlitz. *Leonardo da Vinci, der Wendepunkt der Renaissance*, 1909, Bd. I, p. 203.

[7] W. v. Seidlitz, l. c. Bd. II, p. 48

[8] W. Pater. *The Renaissance*, p. 107, The Macmillan Co., 1910. "But it is certain that at one period of his life he had almost ceased to be an artist."

[9] Cf. v. Seidlitz, Bd. I die Geschichte der Restaurations--und Rettungsversuche.

[10] Müntz. *Léonard de Vinci*, Paris, 1899, p. 18. (A letter of a contemporary from India to a Medici alludes to this peculiarity of Leonardo. Given by Richter: *The literary Works of Leonardo da Vinci*.)

[11] F. Botazzi. *Leonardo biologo e anatomico*. *Conferenze Florentine*, p. 186, 1910.

[12] E. Solmi: *Leonardo da Vinci*. German Translation by Emmi Hirschberg. Berlin, 1908.

[13] Marie Herzfeld: *Leonardo da Vinci der Denker, Forscher und Poet*. Second edition. Jena, 1906.

[14] His collected witticisms--*belle facezie*,--which are not translated, may be an exception. Cf. Herzfeld, *Leonardo da Vinci*, p. 151.

[15] According to Scognamiglio (l. c. p. 49) reference is made to this episode in an obscure and even variously interpreted passage of the *Codex Atlanticus*: "Quando io feci Domeneddio putto voi mi metteste in prigione, ora s'io lo fo grande, voi mi farete peggio."

[16] Merejkowski: *The Romance of Leonardo da Vinci*, translated by Herbert Trench, G. P. Putnam Sons, New York. It forms the second of the historical Trilogy entitled *Christ and Anti-Christ*, of which the first volume is *Julian Apostata*, and the third volume is *Peter the Great and Alexei*.

[17] Solmi l. c. p. 46.

[18] Filippo Botazzi, l. c. p. 193.

[19] Marie Herzfeld: *Leonardo da Vinci, Traktat von der Malerei*, Jena, 1909 (Chap. I, 64).

[20] "Such transfiguration of science and of nature into emotions, or one might say, religion, is one of the characteristic traits of da Vinci's manuscripts, which one finds expressed hundreds of times." Solmi: *La resurrezione*, etc, p. 11.

[21] *La resurrezione*, etc., p. 8: "Leonardo placed the study of nature as a precept to painting ... later the passion for study became dominating, he no longer wished to acquire science for art, but science for science' sake."

[22] For an enumeration of his scientific attainments see Marie Herzfeld's interesting introduction (Jena, 1906) to the essays of the Conference Florentine, 1910, and elsewhere.

[23] For a corroboration of this improbable sounding assertion see the "Analysis of the Phobia of a Five-year-old Boy," *Jahrbuch für Psychoanalytische und Psychopathologische Forschungen*, Bd. I, 1909, and the similar observation in Bd. II, 1910. In an essay concerning "Infantile Theories of Sex" (*Sammlungen kleiner Schriften zur Neurosenlehre*, p. 167, Second Series, 1909), I wrote: "But this reasoning and doubting serves as a model for all later intellectual work in problems, and the first failure acts as a paralyzer for all times."

[24] Scognamiglio l. c., p. 15.

[25] Cited by Scognamiglio from the *Codex Atlanticus*, p. 65.

[26] Cf. here the "Bruchstück einer Hysterieanalyse," in *Neurosenlehre*, Second series, 1909.

[27] Horapollo: *Hieroglyphica* I, II. [Greek: *Mêtera de graphontex ... gupa zographonsin*].

[28] Roscher: *Ausf. Lexicon der griechischen und römischen Mythologie*. Artikel *Mut*, II Bd., 1894-1897.--Lanzzone. *Dizionario di Mitologia egizia*. Torino, 1882.

[29] H. Hartleben, *Champollion. Sein Leben und sein Werk*, 1906.

[30] "[Greek: *gypa de arrena ou phasigenesthai pote, aila phêleias apasas*]," cited by v. Römer. *Über die androgynische Idee des Lebens*, *Jahrb. f. Sexuelle Zwischenstufen*, V, 1903, p. 732.

[31] Plutarch: Veluti scarabaeos mares tantum esse putarunt Aegyptii sic inter vultures mares non inveniri statuerunt

[32] Horapollinis Niloi Hieroglyphica edidit Conradus Leemans Amstelodami, 1835. The words referring to the sex of the vulture read as follows (p. 14): "[Greek: pētera men hepeidē arren en toutō genei tōn zōn ouch hyparchei.]."

[33] E. Müntz, 1. c., p. 282.

[34] E. Müntz, 1. c.

[35] See the illustrations in Lanzzone 1. c. T. CXXXVI-VIII.

[36] v. Römer 1. c.

[37] Cf. the observations in the Jahrbuch für Psychoanalytische und Psychopathologische Forschungen, Vol. I, 1909.

[38] Cf. Richard Payne Knight: The Cult of Priapus.

[39] Prominently among those who undertook these investigations are I. Sadger, whose results I can essentially corroborate from my own experience. I am also aware that Stekel of Vienna, Ferenczi of Budapest, and Brill of New York, came to the same conclusions.

[40] Edm. Solmi: Leonardo da Vinci, German translation, p. 152.

[41] Solmi, 1. c. p. 203.

[42] Leonardo thus behaves like one who was in the habit of making a daily confession to another person whom he now replaced by his diary. For an assumption as to who this person may have been see Merejkowski, p. 309.

[43] M. Herzfeld: Leonardo da Vinci, 1906, p. 141.

[44] The wording is that of Merejkowski, 1. c. p. 237.

[45] The equestrian monument of Francesco Sforza.

[46] The full wording is found in M. Herzfeld, 1. c. p. 45.

[47] Merejkowski 1. c.--As a disappointing illustration of the vagueness of the information concerning Leonardo's intimate life, meager as it is, I mention the fact that the same expense account is given by Solmi with considerable variation (German translation, p. 104). The most serious difference is the substitution of florins by soldi. One may assume that in this account florins do not mean the old "gold florins," but those used at a later period which amounted to 1-2/3 lira or 33-1/2 soldi.--Solmi represents Caterina as a servant who had taken care of Leonardo's household for a certain time. The source from which the two representations of this account were taken was not accessible to me.

[48] "Caterina came in July, 1493."

[49] The manner of expression through which the repressed libidino could manifest itself in Leonardo, such as circumstantiality and marked interest in money, belongs to those traits of character which emanate from anal

eroticism. Cf. Character und Analerotik in the second series of my *Sammlung zur Neurosenlehre*, 1909, also Brill's *Psychoanalysis, its Theories and Practical Applications*, Chap. XIII, Anal Eroticism and Character, Saunders, Philadelphia.

[50] Seidlitz: Leonardo da Vinci, II Bd., p. 280.

[51] *Geschichte der Malerei*, Bd. I, p. 314.

[52] l. c. p. 417.

[53] A. Conti: Leonardo pittore, *Conferenze Fiorentine*, l. c. p. 93.

[54] l. c. p. 45.

[55] W. Pater: *The Renaissance*, p. 124, The Macmillan Co., 1910.

[56] M. Herzfeld: Leonardo da Vinci, p. 88.

[57] Scognamiglio, l. c. p. 32.

[58] L. Schorn, Bd. III, 1843, p. 6.

[59] The same is assumed by Merejkowski, who imagined a childhood for Leonardo which deviates in the essential points from ours, drawn from the results of the vulture phantasy. But if Leonardo himself had displayed this smile, tradition hardly would have failed to report to us this coincidence.

[60] l. c. p. 309.

[61] A. Konstantinowa, l. c., says: "Mary looks tenderly down on her beloved child with a smile that recalls the mysterious expression of *la Gioconda*." Elsewhere speaking of Mary she says: "The smile of *Gioconda* floats upon her features."

[62] Cf. v. Seidlitz, l. c. Bd. II, p. 274.

[63] Cf. *Three Contributions to the Theory of Sex*, translated by A. A. Brill, 2nd edition, 1916, Monograph series.

[64] "On the 9th of July, 1504, Wednesday at 7 o'clock died Ser Piero da Vinci, notary at the palace of the Podesta, my father, at 7 o'clock. He was 80 years old, left 10 sons and 2 daughters." (E. Müntz, l. c. p. 13.)

[65] I shall overlook a greater error committed by Leonardo in his notice in that he gives his 77-year-old father 80 years.

[66] "He who usurps on earth my place, my place, my place, which is void in the presence of the Son of God, has made out of my cemetery a sewer." Canto XXXVII.

[67] It seems that in that passage of the diary Leonardo also erred in the number of his sisters and brothers, which stands in remarkable contrast to the apparent exactness of the same.

[68] v. Seidlitz, l. c., II, p. 270.

[69] Solmi, *Conf. fior.*, p. 13.

[70] Müntz, l. c., La Religion de Leonardo, p. 292, etc.

[71] Herzfeld, p. 292.

[72] Vasari, translated by Schorn, 1843.

[73] Ebenda, p. 39.

[74] Concerning these letters and the combinations connected with them see Müntz, l. c., p. 82; for the wording of the same and for the notices connected with them see Herzfeld, l. c., p. 223.

[75] Besides, he lost some time in that he even made a drawing of a braided cord in which one could follow the thread from one end to the other, until it formed a perfectly circular figure; a very difficult and beautiful drawing of this kind is engraved on copper, in the center of it one can read the words: "Leonardus Vinci Academia" (p. 8).

[76] This criticism holds quite generally and is not aimed at Leonardo's biographers in particular.

[77] Seidlitz II, p. 271.

[78] La natura è piena d'infinite ragionè che non furono mai in isperienza, M. Herzfeld, l. c. p. II.

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