International Congress Series 1242 (2002) 487–494

The medical and surgical management of the pilgrims of the Jacobean Roads in medieval times Part 2. Traces of ergotism and pictures of human suffering in the medieval fine arts

C. Nemes*, M. Goerig

Jlmtalklinik, Pfaffenhofen, Krankenhaustr. 72-Pfaffenhoffen, D-85276, Germany

Abstract

From a medical point of view, human suffering due to ergotism has been best and very realistically portrayed in the paintings and drawings of Hieronymus Bosch, Pieter Bruegel the Elder and Mathis Grünewald. These painters have often documented the miserable life of the cripples or other disabled people with the characteristic signs of cerebral palsy or polio. On the altar of Isenheim (in Colmar), Grünewald depicted some victims of ergotism and 14 medical herbs, which are a botanically correct table, and maybe the forgotten ingredients for the Antonite-balsam and -wine. It cannot be excluded with certainty that the existence of psychotropic drugs in medieval times and the experiences of ergotism caused by toxic delirium may be an explanation for the origins of some paintings by H. Bosch, Grünewald and P. Bruegel.

Keywords: Ergotism (ignis sacer); H. Bosch; P. Bruegel; Grünewald; Psychotropic substances; LSD

1. Traces of ergotism in contemporary fine art

All the paintings and drawings dating from the end of the Middle Ages bear very authentic witness to the suffering and fate of the pilgrims, who were stricken with ''ignis sacer'' (''Holy Fire'', ''St. Anthony's fire''). Sometimes, these images reflect suffering and dying in a clearer way than some contemporary medical reports [1–5], which are largely missed in the history of ergotism.

* Corresponding author. Fax: +49-8441-7363.
E-mail address: drnemes@t-online.de (C. Nemes).

0531-5131/02
PII: S0531-5131(02)01097-X

In the first part of our study, we emphasized that the herbs and the secret recipes of St. Anthony's order were unfortunately lost at the beginning of the 16th century. Therefore, in the absence of first-hand historico-medical knowledge, we have to search in Christian iconography and in the treasury of the fine arts. Some of them are presented here. From a medical point of view, human suffering has been best and very realistically portrayed in the paintings and drawings of Hieronymus Bosch van Aken (1450?–1516 [6,7]) and Pieter Breugel the Elder (1520–1569 [2,3]). Many crippled people are clearly seen with their wooden legs, walking on stilts, many of them surely victims of ergotism (Fig. 1). However, there are also other types of invalids and wretched creatures: with wooden legs following traumatic amputation ("limping courier"), with infantile cerebral palsy or atrophic legs as a result of polio (Fig. 1) [8]. In the cloister of Burgos on the road to Santiago [9], in the Prado in Madrid, in the church of St. Michael in Munich (the tomb of Cosmas and Damian), also in Antwerp and in the literature, a very scurillous surgical scene demonstrating amputation of a gangrenous limb by two medical saints Cosmas and Damian (literary first deceased in 13th century by Jacobus de Voragine's *Legenda aurea*;

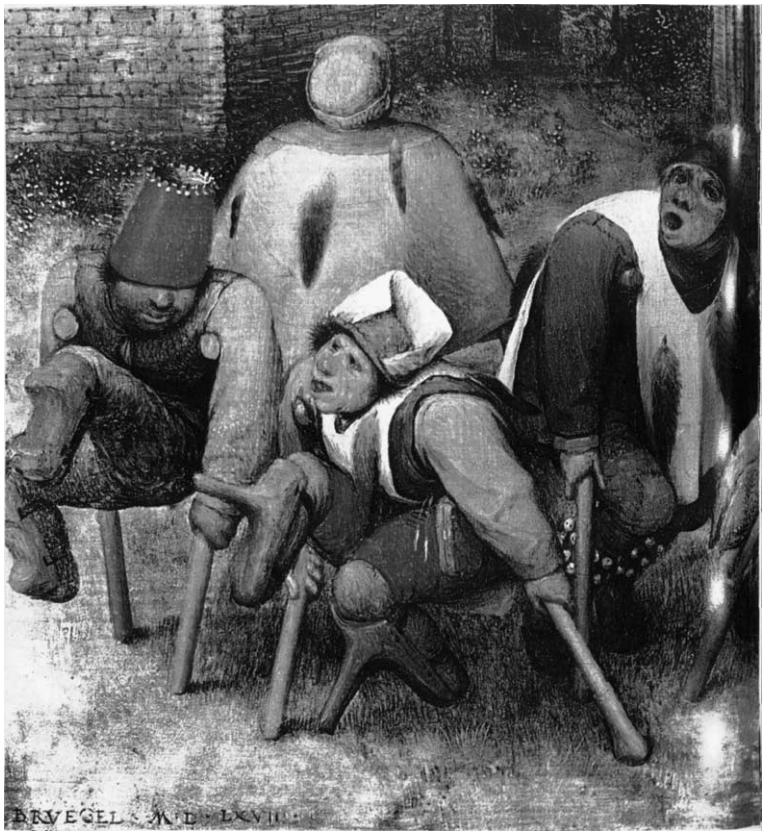

Fig. 1. Crippled people (victims of ergotism) with their wooden legs sliding and hobbling or walking on crutches. Drawings of Pieter Bruegel the Elder, 1558. After Glück [3].

[26], Fig. 2.). The curiosity of another fresco-cycle (painted by Fernando Rincón in the XVIth century, deposited in the Prado, Fig. 3) is hidden in detail: a leg of a Saracen man had been amputated in the waiting-room of the operating theatre before the miraculous replacement; a mystical transplantation of the extremity took place [9]. In reality, there was no need for such a black donor in this dishonourable manner: the leg itself had already become black before.

Mathis Gothardt Neithardt (1480–1528), the mystic painter, who later became famous and erroneous under another name Grünewald, a contemporary of Dürer and Rafael, was living in the Antonite-infirmary of Isenheim destroyed during the Great French Revolution [10,11]. Grünewald might have often observed here both manifestations of ergotism with gangrene (more typical for France) or with convulsions, delirium, optical hallucinations and apathy (chiefly observed in Germany as "Kriebelkrankheit"). About 1514–1515, he painted for the hospital the greatest and most marvelous tableaux of a winged altar in the Western fine arts, illustrating the temptations of St. Antonius [10,11]. (This tableau can be seen nowadays in the Museum *Unterlinden* in Colmar.) His figures and surrealistic

Fig. 2. Disabled people and other types of invalids with wooden legs following traumatic amputation, with infantile cerebral palsy or atrophic legs as a result of polio. Drawings of H. Bosch. After de Tolnay [7].

Fig. 3. Miraculous replacement of a gangreanous limb by the two medical saints Cosmas and Damian (painting by Fernando Rincon, 16th century, Prado). After de Lucas [9].

creatures are reminiscent of the similar apocalyptic paintings of Hieronymus Bosch and Pieter Bruegel the Elder. Grünewald also created figures with livid mutilated fingers, whose bodies are fully covered with disgusting and purulent ulcers. Medical and art historians [6,25] have long supposed that the demon covered with suppurate ulcers in the "Temptations of St. Antonius" by Grü-newald portrays the typical cutaneous signs of gangrenous ergotism. The victims of ergotism (ignis sacer) might appear in the fancy of the painters as the preliminary stage of the torments of Hell [12]. Considering the dreadful pains and suffering beyond all words, this was surely no exaggeration, and explains why ergotism also had been called "ignis gehennae" (fire of Hell) in medieval times. Nevertheless, to solve the mysteries of the wines and balsams of the Antonites, we should take into consideration the herbs of the so-called *conversation wing of the altar of Isenheim* [10,12]. At the feet of the saints Antonius and Paulus, at least 14 medical herbs could be identified by Kühn [10] by the assistance of the botanist Prof. Issler from Colmar (1948; Table 1.). They are displayed in the museum "Antoniterhaus" in Memmingen [13]. To understand the significance of these 14 medical herbs, it will be sufficient to refer to the first 8 of them, which could be found in many medieval herbals; the other 6 (e.g. *Scrophularia acquatica* or *Herba Divi Antonii*, *Triticum repens*, *T. spelta* and *Papaver rhoeas*) had been employed for curing ignis sacer, bubonic plague, dysentery, craving ("Heibßhunger") and thirst, gangrene (necrosis, mortification), purulent wounds and old ulcers [10]. Most of the herbs painted by Grünewald can be also found in the pharmacopoeia between 1244 and 1591 [10]. All the herbs portrayed by Grünewald are

Table 1
Medical herbs of the altar of Isenheim (by Grünewald, 1514–1515)

Latin	German	English
Plantago major	breiter Wegerich	plantain
Plantago lanceolata	Spitzwegerich	ribwort
Papaver rhoeas	Klatschmohn, Magsamen, Kornrose	corn-poppy
Verbena officinalis	Eisenkraut	verbena, vervain
Ranunculus bulbosus	St.-Antoni-Röslein, knolliger Hahnenfuß	ranunculus
Scrophularia aquatica	Drüsenwurz, Herba Divi Antonii	?
Lamium album	Taubnessel	deadnettle
Triticum repens	Queckengras	couch-grass?
Veronica chamaedrys	Gamander-Ehrenpreis, Donnerbümlein, Köhlerkraut	speedwell
Gentiana cruciata	Kreuzenzian, St.-Peters-Kraut	gentian
Vincetoxicum officinalis	Schwalbenwurz, Lorenzkraut	?
Trifolium repens	Klee, Wundklee	trefoil
Cyperus fuscus	Cypergras, Wilder Galgen	galingale (family)
Triticum spelta	Spelt, Peterskorn	spelt

After Ref. [10][a].

[a] Regarding to this botanical study, we have to remark that L. Behling (1957, 1967) was actually able to identify only 10 herbs on this painting by Grünewald.

botanically correct; they are not simply a bit of meadow as painted by Dürer. Grünewald's plants were not to be found anywhere else at the same time in this botanical entity [12]. This lower part of the painting is really a botanical table. Therefore, Kühn (1948) supposed: these herbs served as ingredients for the preparation of Antonite-wine and -balsam with herbal additives [10,12].

2. Pictures of the apocalypse by Bosch and Breugel: an effect of ergot alkaloids and of LSD?

It would surely be alluring to postulate, that religious-tinged hallucinations and deliriums, which often occurred at the end stadium of sepsis or ergotismus convulsivus [14–16] might have influenced or even inspired the fancy of the painters living in the hospitals (Grünewald) or observing crippled people after church-festivals in the years of the epidemics (H. Bosch, P. Bruegel). This very attractive hypothesis is given strong support by comparing the clinical signs of ergot-intoxication with the mass hallucination scene in Eleusis in Greek Antiquity after consuming a psychotropic mixture (*aira*) prepared from *Claviceps paspali*, another type of ergot, enabling people to initiate in the Great Mystery of Demeter [17,18]. There is no denying such psychotropic influence of drugs could explain the origin of many very surrealistic paintings such as the "Last Judgment", "The Garden of Desires" and "The Temptations of St. Antonius" (H. Bosch, about 1500 [6,7,19]).

However, this purely *medical view of the fine arts* can only be regarded as a superficial interpretation. Great art does not need any psychodelics to stimulate the imagination, as appears to be the case in many works of our present day "*Psychonautics*" in modern art (using the terminology of Jünger [20]). Nevertheless, it cannot be excluded with certainty

that the reported hallucinations of the inhabitants of the St. Anthony's hospital might have somehow influenced the composition and the colouring of the altar of Isenheim [12]. However, the imminent dangers of everyday life, the ever existing threat of the end of the world, which could happen daily, the warning "memento mori!", the numerous popular depictions of the *dance macabre,* the legends of Christian martyrdom, and the torments and tortures before the executions [21–23]—all these factors were for the imagination of the artists more important than the hypothetical but unprovable effects of some ergotamin alkaloids, even though we now know that all the alkaloids of *C. purpurea* are derivable from lysergic acid diethylamide (LSD), and therefore capable of producing model psychosis [14,17,18,24]. On a tableau by H. Bosch ("Temptation of St. Antonius" in Museu Nacional de Arte Antiga, Lisbon, Fig. 4), a cripple can be seen with wooden leg and walking on crutches; below him a "*sorcerer*" with a top hat, whose walking-stick is in

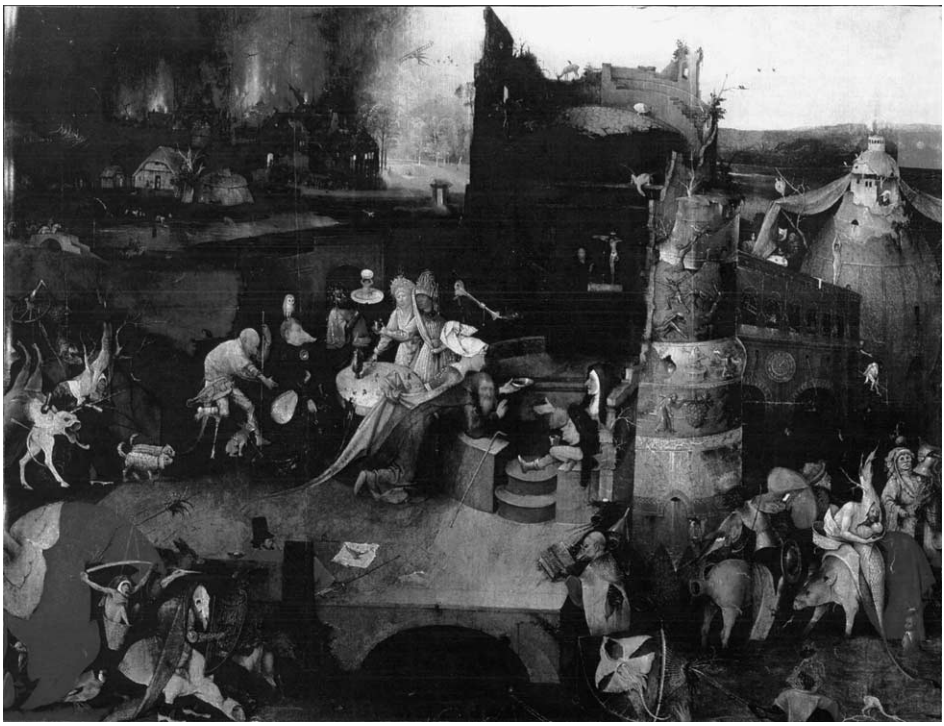

Fig. 4. St. Anthony's temptation by Hieronymus Bosch (triptych of the Museo Nacional de Arte Antiga, Lisbon) which refers to the suffering from ergotism and the use of psychotropic drugs of the nightshades, e.g. depicting a burning St. Anthony's hospital (left at the top), a fruit of mandragora (left at the bottom), a pilgrim carrying a wooden prosthesis (left in the middle) as well as a horsemen riding on a ceramic urn with a thorny head like a thorn-apple (*D. stramonium*) and another rider with a mandrake-plant on the head on the right corner. A little right to the huge "mandrake in the morass", a "sorcerer" can be identified, whose amputated foot is lying on the cloth; his stick is like a crutch. According to the interpretation of the art historians Charles de Tolnay, 1965 [7] and Wilhelm Fraenger, 1975 [6] portraying an obscure–obscene allusion to the hidden sect of Adamites in Hertogenbosch with many references of medical importance. After Fraenger [6].

reality a crutch [6]. The amputated foot lies to the right of him on a sheet, demonstrating the helplessness of St. Antonius against ergotism. In the background, left at the top, a building is burning; this house is possibly an Antonite-hospital, visible by the T-shaped cross of the ridged turret. The inhabitants of the hospital are standing a short distance away while the demons help to destroy the house. On the contrary, the rider in the central tableau to the right is carrying a huge fruit like an orange-red berry on his head; a usual medieval symbol of dreams. In the opinion of Fraenger (1975, [6]), this berry is the fruit of the mandrake (*mandragora* or *dudaim* in Genesis 30:14). A little ahead, to the left, another horseman can be seen riding on a ceramic urn, whose thorny head is composed of the thorn-apple (*Datura stramonium*) or possibly only the fruit of the *Cardanum arvense* (*scratch-thistle*). Without doubt, these two nightshade plants may indicate the use of narcotic herbs by the witches eliciting sexual excitement, dizziness, wild dreams, raging, hallucinations and other toxic symptoms connected with the black mass of the Adamites (in Hertogenbosch) as it is portrayed by H. Bosch [6,7]. If this should be the case, Bosch can be regarded as a forerunner of Thomas de Quincey, Charles Baudelaire and Edgar Allan Poe, who used narcotic drugs as a source of artificial inspiration [6].

To summarize, we can state that the Medium Aevum, physicians, as well as artists have had to grapple with the enigma of an epidemic, whose origin and spread they could not explain nor treat successfully. The only way to overcome the problem were strong faith in God's grace and punishment, the strict isolation of the ill and a resign, virtuous life of simplicity, poverty and despair [21–23]. Faith and devotional pictures helped as a panacea and a religious placebo for the incurable, expressing the unutterable. Faced with thousands of victims of the wars in Africa, the Near East, Afghanistan and elsewhere, with an army of people, all missing limbs as a result of landmines, hobbling towards a Red Cross package dropped from the sky; faced with two seemingly unconquerable epidemics of our time (BSE and foot-and mouth-disease) and challenging the greatest systematic massacre of domestic animals that Europe has ever seen, these old paintings of human suffering are actually gaining in importance in a very impressive manner. The slaughter of millions of animals in the hope of preventing small human epidemics shows clearly how much we have lost respect for the singularity of Creation.

Acknowledgements

The authors should like to thank Gillian Sorge, Jetzendorf/Bavaria for her generous and skilled help with the preparation of this paper.

References

[1] L. Behling, Die Pflanze in der mittelalterlichen Tafelmalerei, Weimar (1957).
[2] T. Foote, Bruegel und seine Zeit um 1525–1569, Time-Life International (Nederland) [1968], pp. 66–67, 80–87, 130–133.
[3] G. Glück, Das Bruegel-Buch, Verlag von Anton Schroll and Co., Wien, 1936.
[4] M.J. Imbault-Huart, La médecine au Moyen Age à travers les manuscits de la Bibliothèque Nationale, Editions de la Porte Verte, Paris, 1983, p. 77.

[5] P.M. Jones, Heilkunst des Mittelalters in illustrierten Handschriften, Belser Verlag, Stuttgart, 1999, pp. 45–57.
[6] W. Fraenger, Hieronymus Bosch, VEB Verlag der Kunst, Dresden, 1975.
[7] Ch. de Tolnay, Hieronymus Bosch. Das Gesamtwerk, Holle Verlag, Baden-Baden, 1965.
[8] B. Rüttimann, Bilder des menschlichen Leidens, Internet (1997) (http://www.unicom.unizh.ch/magazin/archiv/2-97/leiden.htm).
[9] A.C. de Lucas, Folklore medico-religioso, Hagiografias paramedicas, Avis-Aurea-Morata, Madrid, 1943.
[10] W. Kühn, Grünewalds Isenheimer Altar als Darstellung mittelalterlicher Heilkräuter, Kosmos 44 (1948) 327–333.
[11] E. Orlandi, Grünewald, Galerie grosser Meister, Arnoldo Mondadori Editore, Verona, 1976.
[12] V.H. Bauer, Das Antonius-Feuer in Kunst und Medizin, Springer Verlag, Berlin, 1973.
[13] H.W. Bayer, A. Mischlewski, Führer durch das Antoniter-Museum, Hrsg von der Stadt, Memmingen, 1988.
[14] W. De Boor, Psychopharmakologie und Psychopathologie, Springer Verlag, Berlin, 1956.
[15] F.J. Bove, The Story of Ergot, S. Karger, Basel, 1970.
[16] L. Lewin, Phantastica, Die betäubenden und erregenden Genussmittel, Verlag G. Stilke, Berlin, 1927, p. 127ff.
[17] Hofmann A., 1943, zit. De Boor, 1956, pp. 150–151.
[18] R.G. Wasson, A. Hofmann, C.A.P. Ruck, Der Weg nach Eleusis, Das Geheimnis der Mysterien, Suhrkamp Verlag, Hamburg, 1978.
[19] Chr. Rätsch, Heilkräuter der Antike, Diederichs Gelbe Reihe, E. Diederichs Verlag, München, 1998.
[20] E. Jünger, Annäherungen. Drogen und Rausch, dtv/Klett-Cotta, 1990, pp. 40ff, 183ff, 221–246, 354.
[21] O. Borst, Lebensformen im Mittelalter, Ullstein Verlag, Frankfurt a. Main, Berlin, 1979, pp. 255–260, 526–538, 723–744.
[22] A. Borst, Barbaren, Ketzer und Artisten, Welten des Mittelalters, Piper Verlag, München, 1988, pp. 134ff, 153, 161, 212, 216, 230, 235, 250, 255, 315, 327, 419ff, 425, 427, 482, 489, 494, 497, 500, 503, 510, 600.
[23] B. Tuchman, Der ferne Spiegel, Das dramatische 14, Jahrhundert, claassen Verlag, Düsseldorf, 1980.
[24] R. Schmitz, Geschichte der Pharmazie, Govi-Verlag, Eschborn, 1998, pp. 412–416.
[25] E. Wickersheimer, "Ignis sacer"-Bedeutungswandel einer Krankheitsbezeichnung, CIBA-Symposium, vol. 8, 1960, 160–169.
[26] G. Fichtner, Das verpflanzte Mohrenbein—zur Interpretation der Kosmas-und Damian-Legende, in: G. Baader, G. Keil (Eds.), Hrsg.: Medizin im mittelalterlichen Abendland, Wissenschaftliche Buchgesellschaft, Darmstadt, 1982, pp. 324–343.