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THE BRUNONIAN INFLUENCE ON THE MEDICAL THOUGHT AND PRACTICE OF JOSEPH FRANK

by

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In Europe at the end of the eighteenth century and the beginning of the nineteenth a significant change was taking place in the perception, description, definition, and ordering of medical knowledge. Many physicians realized that medical knowledge could not be organized or ordered around a few basic principles or laws like mathematics or the physical sciences, nor could diseases be classified in the same manner as botanical or zoological species. Disease began to be perceived and described in terms of organic lesions rather than just symptoms. Pathological alterations of organs and tissues were studied by means of post-mortem examinations. New diagnostic techniques, such as auscultation and percussion, revealed structural changes in the body while the patient was still alive. Traditional observations gave way to clinical examination. The clinic and teaching hospital emerged as the important institutional settings for the study of diseases.

Much of the secondary literature on the history of clinical medicine at that time, such as the work of Ackerknecht and Foucault, has concentrated on the Paris school.[1] A comparative look at clinical medicine in different social and scientific contexts might lead to better generalizations about the nature of clinical medicine and its development.

Except for a very brief stay at the University of Göttingen, which was then under English rule, Johann Peter Frank (1745–1821) and his son Joseph Frank (1771–1842) spent all their lives working in absolutist states—the Holy Roman and Russian Empires.[2] Together they taught at the universities of Pavia, Vienna, and Vilnius. In

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[1] E. H. Ackerknecht, *Medicine at the Paris Hospital 1794–1848*, Baltimore, Johns Hopkins University Press, 1967; M. Foucault, *The Birth of the clinic*, trans. A. M. Sheridan Smith, New York, Pantheon Books, 1973. In recent years there have been more attempts at comparative analyses of the development of clinical medicine, such as O. Keel, 'The politics of health and the institutionalization of clinical practices in Europe in the second half of the eighteenth century', in W. F. Bynum and R. Porter (editors), *William Hunter and the eighteenth-century medical world*, Cambridge University Press, 1985, pp. 207–56.

[2] The most complete and accurate biographical information about the Franks is contained in their unpublished memoirs, 'Mémoires biographiques de Jean Pierre Frank, et de Joseph Frank, son fils, redigés par ce dernier', MS, University of Vilnius Library, Lithuanian SSR, 5 vols., (Leipzig, 1848). Unless noted otherwise, all of my biographical data will be taken from this source and cited as *Mémoires biographiques*. The Roman numeral denotes the volume number, followed by the chapter number and the page(s). The manuscript pages have been numbered twice and I will give both page citations. An abridged Polish translation of the memoirs was published by W. Zahorski, *Pamiętniki*, 3 vols., Vilnius, Księgarnia Stowarz. naucz. polskiego, 1921. A few excerpts from the memoirs were published, in the original French, in several journals by S. Trzebiński during the 1920s. Some biographical materials relating to Johann Peter Frank have been translated and published by George Rosen, 'Biography of Dr. Johann Peter Frank . . . written by

addition, Johann Peter Frank was the director of the Medical-Surgical Academy in St Petersburg. As medical thinkers and writers; as medical organizers and reformers; as personal physicians and councillors of state to princes, emperors, and tsars; and as directors of major hospitals and founders of several clinics, medical societies, and institutes in both Western and Eastern Europe, they played an important role in the development of clinical medicine. They travelled extensively and were personally acquainted with many of the major physicians and scientists in Western and Eastern Europe as well as with the work of the leading medical and scientific institutions in those countries. The evolution of their medical ideas and the thrust of their medical reforms closely reflected many of the transformations occurring in medicine at the end of the eighteenth century and the beginning of the nineteenth.

The medical ideas of John Brown played an important role in shaping the thought and practice of Joseph Frank, and it is this encounter that I shall describe in this paper.[3] Frank's experience with the Brunonian doctrine went full circle: from initial adherence and adulation to moderate skepticism and then, finally, to rejection, not only of Brunonianism but of medical systems in general.

The intellectual milieu in which the medical thought of Joseph Frank developed, and which predisposed him to the ideas of Brown, consisted of many intertwined themes. Most of them, when teased out, reveal an ancient ancestry and a preoccupation with the definition of medicine in relation to other intellectual endeavours and practices, especially the natural sciences. There were such recurrent themes as the search for order and certainty, mechanism vs. vitalism, empiricism vs. rationalism, general disease states vs. specific diseases, and science vs. art. At the end of the eighteenth century, these themes were interpreted within the conceptual framework of the French philosophy of Ideology, German *Naturphilosophie*, and British empiricism. In the course of his intellectual development, Joseph Frank was subjected to all of these influences.

The intimate relationship between medicine and the natural sciences is especially important for understanding medical thought because the natural sciences provided the leading paradigms and principles for the numerous medical systems of the eighteenth century.[4] Medical systems were formed around a small number of fundamental principles, at first drawn chiefly from mechanics but later also from chemistry, from which, by deductive reasoning, all clinical and therapeutic phenomena supposedly could be explained. Mechanistic philosophy, at the beginning of the century, as well as the discovery of new gases, electricity, and galvanism toward its

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himself', *J. Hist. Med.*, 1948, **3**: 11–46, 279–314. The standard nineteenth-century biographical dictionaries also have entries on the Franks.

[3] Much of the material for this paper has been taken from chapters 4–6 of my 'Joseph Frank (1771–1842) and the development of clinical medicine: a study of the transformation of medical thought and practice at the end of the 18th and the beginning of the 19th centuries', Ph.D. diss., Harvard University, 1977. Brunonianism was the focus of my senior honours thesis, 'The Brunonian doctrine and Joseph Frank', Harvard University, 1970. Others who have analysed the influence of the Brunonian doctrine on Joseph Frank have been R. Müller, *Joseph Frank (1771–1842) und die Brownsche Lehre*, Zurich, Juris, 1970; and S. Trzebiński, 'Brownizm w świetle pamiętników Franka', [Brunonianism in the light of the Frank memoirs], *Archwm Hist. Filoz. Med.*, 1924, **1**: 113–26.

[4] There are many secondary sources concerning the medical systems of the eighteenth century, e.g., Lester King, *The medical world of the eighteenth century*, University of Chicago Press, 1958.

latter half exerted strong influences on medicine and inspired new medical systems.

Newtonian and Cartesian physics reinforced the notion of mathematical (geometric) reasoning and mechanism in medicine (the hydraulic model of physiological function), thereby giving further impetus to iatrophysics. Mechanical forces and dynamic principles formed the core of Friedrich Hoffmann's (1660–1742) medical system, which greatly influenced the work of such later systematists as Hieronymus Gaub (1705–90), William Cullen (1710–90), and John Brown. Their iatromechanical hypotheses tended to focus the attention of physicians on the solid parts of the body, the muscles and nerves. Health was defined in terms of a proper muscle-nerve tone. Changes in this tone—either spasms or atony—resulted in disease.

The experimental work of Albrecht von Haller (1708–77) on tissue irritability and sensibility further accelerated the shift away from the predominant doctrine of humours to solidist pathology. It also illustrated to many of his contemporaries that scientific methodology could be successfully applied to medicine, that properties of living matter analogous to those of inert matter could be discovered and described. The mechanistic interpretation of vital functions, the neural concept of disease, and the belief in vital forces analogous to physical forces were all notions that played an important role in forming Joseph Frank's early medical thought.

The medical system of Brown has been well described already. It addressed many of the major concerns of medicine in its day—the need for certainty, the need to relate medical theory and practice, the need to find a vital force or principle responsible for the organization of organic matter, and the need for medical reforms. The fact that it addressed these needs (rightly or wrongly) as well as its supposed novelty and simplicity largely explain its great appeal. Rudolf Virchow compared the stir caused by the publication of Brown's *Elements of medicine* in Edinburgh in 1780 to the effect of an earthquake which shook the whole European continent and even the physicians of the New World.[5]

From the medical point of view, the Brunonian doctrine did not contain much that was new; and its scientific value cannot compare with that of the work of Haller, Morgagni, or Bichat. Brunonian therapeutics were meant to be clear, simple, and mathematically precise. But medical practice could not be reduced to such mathematical simplicity or exact conditions, especially given the state of clinical and pharmacological knowledge at that time. Moreover, Brown's over-simplified system did not demand much knowledge of anatomy and did away with any qualitative considerations regarding body fibres and fluids. It ignored the symptoms, physical signs, and structural changes associated with disease, and rejected the correlation of bedside data (as well as anatomical lesions) with autopsy findings: "never expect to discover the cause of disease in dead bodies", wrote Brown.[6] In fact, the Brunonian doctrine opposed many of the major tenets of clinical medicine and pathological anatomy. Nevertheless, as the example of the Franks will show, it did attract the attention of clinicians and there were serious attempts to apply it in the clinic.

[5] G. Rath, 'Alexander von Humboldt and Brunonianism', *J. Hist. Med.*, 1960, **15:** 75–7, p. 75.

[6] *The works of Dr John Brown M.D. To which is prefixed a biographical account of the author, by W. C. Brown,* 3 vols., London, J. Johnson, 1804, vol. 2, para. 84, pp. 199–200.

Joseph Frank heard about John Brown during a journey to Switzerland in the summer of 1791.[7] In June of that year, at the age of 20, Joseph had received his medical degree from the University of Pavia, where his teachers had been Spallanzani, Volta, and Scarpa, and a month later he and his father departed for Switzerland.

Upon his return to Pavia, a close friend and colleague, Vincent Solenghi, asked him about the new things that he had learned about medicine on his journey. Among others, Joseph mentioned that he had heard about a physician Brown, who thought that he could cure all diseases with alcohol and opium. Solenghi replied that he was misinformed, that Brown was really a "great genius" who had tried to apply to medicine the philosophy of Bacon and Newton.[8] Since Solenghi at that time did not possess a copy of Brown's *Elements of medicine*, he recommended that Joseph read a book by Robert Jones, a pupil and follower of Brown, which described the philosophical basis of Brown's system. It was entitled *An inquiry into the state of medicine, on the principles of inductive philosophy* (London, 1781). Joseph and Solenghi spent the rest of the summer reading and discussing Jones's book, which touched on many of the important issues facing physicians then, particularly the questions concerning the certainty or scientificity of their craft.[9]

A strong impulse to improve medical practice motivated Joseph Frank, and other young physicians trained in different medical traditions, to examine seriously the tenets of the Brunonian doctrine. They were seeking a scientific base for medicine, a medical theory to guide clinical practice. The anti-humoral, solidist, and physiological medical system of Brown was new, simple, and short in every proposition. It avoided philosophizing about the cause of life and confined itself to explaining the phenomena that life produced. It was opposed to the prevailing doctrine of antiphlogistic or debilitating treatment of diseases—blood-letting and purgatives—and above all, according to its followers, it conferred upon medicine the character of a science by applying to medicine the philosophical principles of Bacon and Newton.

Although reading Jones's work and then that of Brown greatly inspired Joseph, he did not agree with all the comparisons that Jones made between Bacon and Brown. Some of Bacon's axioms, he found, were favourable to Brown's doctrine but many

[7] It is unclear when Joseph first heard about Brown's medical doctrine. A. Adomowicz (1802–81), an assistant to Joseph at the University of Vilnius, claimed that Joseph had heard about Brown "from the mouth of his father" and had "become so inspired that he wrote a little work in Italian in 1786 about the subject." See his 'Prof. Józef Frank i jego teorya lekarska', *Gazeta lekarska* [Warsaw], 1868, **5**: 72. In the *Gesundheitstaschenbuch für das Jahr 1801*, Vienna, 1801, it is mentioned that the Franks made a brief visit or stopover in Edinburgh in 1786 and a longer visit there from September 1789 to May 1790. On both occasions they would undoubtedly have heard about Brown. It is odd that neither trip was mentioned in either of the Franks' memoirs; both usually described their journeys in detail. Joseph briefly stated, in a published letter to Brugnatelli, that there were whispers in Pavia about Brown in 1790: *Über die Lehre von Brown an Herrn Brugnatelli*, trans. from the Italian by A. M. Weikard, Frankfurt, 1796, p. 26. So the chances are very good that Joseph had already heard something about Brown before going to Switzerland in 1791, even though the first mention of Brown in his memoirs is in connection with that trip (*Mémoires biographiques*, I. 23. 413/389).

[8] J. Frank, *Mémoires biographiques*, I. 23. 430/406. Also see J. Frank, 'Biographie du docteur John Brown', in *Médecine portative, ou guide de santé*, Paris, Pironnet, 1803, pp. 16–42. Here Frank described his early reading of, and experiences with, the Brunonian doctrine at Pavia.

[9] G. Risse has elaborated on this theme in 'The quest for certainty in medicine: John Brown's system of medicine in France', *Bull. Hist. Med.*, 1971, **45**: 1–12 and 'The Brownian system of medicine: its theoretical and practical implications', *Clio Medica*, 1970, **5**: 45–51.

others were contrary to it, as well as to all medical systems.[10] At this time he was more concerned with those axioms that were favourable. Yet he never lost sight of those that were objectionable. Eventually they would come to the forefront as he tried to apply the Brunonian doctrine in practice, and to reconcile it with new findings in the natural sciences.

Johann Peter was content to see Joseph so eagerly pursuing his studies and clinical practice. Thinking that his great enthusiasm for Brown would soon fade, he did not hinder him in any way. He noted that his students' preoccupation with the Brunonian theory increased both their enthusiasm and the accuracy of their clinical observations.[11] They began to pay more attention to the cause of disease, and to the effects of such external agents as food, drink, air, and drugs on the body. Brown was read "night and day". Some admired his doctrine for its novelty, while others were unable to accept it because they felt it led to great errors in treatment. Many debates ensued.

The fact that Johann Peter did not sharply attack the Brunonian doctrine and even defended Joseph's sympathy to it, explains in part the good reception that Brown's ideas received in Italy. Nevertheless, Johann Peter cautioned his students against blindly accepting the doctrine of Brown. He felt that he did not understand well all of Brown's ideas and thus did not want either to defend him, or accuse him of some grievous error. But he did disagree with him in many respects and clearly articulated his points of disagreement. He also tried to show that many of the ideas that Brown claimed to be new, and his own, were really taken from others. In presenting his opinions and criticism, both to his students and in the press, Johann Peter tried to avoid bitter sectarian debates which would only leave bad feelings on both sides. This attitude, combined with the eclectic nature of his teaching, produced an atmosphere conducive to a critical examination of the Brunonian doctrine.

Joseph's earliest publications, panegyric in tone, were explanations of and commentaries on the works of Brown and his followers. His first publication, an Italian-language tract on the Brunonian system (1794), described Jones's work and commented on a number of other books written in Britain and Italy concerning the Brunonian doctrine. He ended by saying:

> I hope that this work will be received by the followers of Brown as a sign of my eagerness to fulfill their wishes and I am not concerned about their enemies among whom are many of my admired teachers.[12]

The following year he translated Jones's *Inquiry* into Italian, and appended his own notes concerning some of his earliest *practical* experiences with the Brunonian doctrine.[13] According to William Cullen Brown, the son of John Brown, Joseph was

[10] J. Frank, *Mémoires biographiqes*, I. 24. 434/410.

[11] Johann Peter described the reaction of his students to Brown and his own views on the Brunonian doctrine in his introduction to Joseph's *Heilart in der klinischen Lehranstalt zu Pavia*, trans. F. Schaeffer, Vienna, Camesina, 1797, pp. 19–29.

[12] Joseph Frank, *Über die Lehre*, op. cit., note 7 above, p. 70.

[13] J. Frank, *Ricerche sullo stato della medicina secondo i principi della filosofia indutiva*, 2 vols., Pavia, 1795.

"the most assiduous and successful in promoting the new principles of medicine".[14] But slowly, as Joseph's clinical experience increased, his views began to moderate. The clinics at Pavia and Vienna became his testing grounds.

When Joseph began his work at Pavia in 1792, he felt that he was very successful in applying Brown's principles at the bedside. The only exception was the case of a young girl suffering from typhus who was given 20 drops of laudanum, three times a day, fell into a deep coma and died. Nevertheless his apparent overall success encouraged other young physicians to ask Joseph for private lessons in the "new doctrine". Soon a small circle of approximately thirty persons was formed and began meeting regularly to discuss Brown's medical doctrine. Joseph agreed to meet with them, but on the condition that his father be kept ignorant of these meetings.

In order to avoid conflicts with the faculty, Joseph often had to mask his Brunonian views with what he called "ancient nomenclature". After he wrote the apologetic tract in Italian mentioned above, in 1794, his father angrily warned him that by publicly coming out in favour of Brown's system he would close off his own entry into the university and the hospital. The warning was very sound. Even though the university and the hospital were not completely closed to him (largely due to the reputation of his father), his Brunonianism did hinder his early career. As a medical assistant at the Pavia clinic and a repetitor of special therapy, he had to moderate or disguise his true beliefs while pursuing his academic duties. Two years later (1796), when he joined his father in Vienna, he was not allowed to teach at the university because of his Brunonian views and so had to give private lessons instead.[15]

When Johann Peter left for Vienna in 1795, Joseph took over the Pavia clinic and his father's course on special therapy. He kept his father informed about his work in the clinic and took every opportunity to bring up Brown's doctrine. An extract from one letter in particular reveals his strong feelings. In that letter he stated that the anatomist Antonio Scarpa at Pavia was inclined toward the Brunonian doctrine and that in time Johann Peter would also embrace it. He then mentioned several ways in which the views of Brown and his father were compatible. Joseph suggested that his father follow the example of the Irish chemist Richard Kirwan (1733–1812), who abandoned an early belief in phlogiston in order to embrace "the system of Lavoisier".[16]

In his clinical reports from Pavia, Joseph classified most of the diseases that he observed as asthenic, that is, due to lack of excitement.[17] The influence of Brown, who thought that most diseases were asthenic, is quite apparent. One of the difficulties in applying the Brunonian therapy in the clinic was that it denied any specific action of

[14] W.C. Brown, op. cit., note 6 above, vol. 1, p. 163.

[15] In Vienna, Joseph worked as a hospital physician at the Allgemeine Krankenhaus and helped to organize a Society of Physicians, which was very pro-Brunonian. For a brief description of Brunonianism in Vienna see E. Lesky, *The Vienna Medical School of the 19th century*, trans. L. Williams and T. S. Levij, Baltimore, Johns Hopkins University Press, 1976, pp. 8–12.

[16] J. Frank, *Mémoires biographiques*, I. 27. 505/461. For more information on Kirwan's transformation see Aaron J. Ihde, *The development of modern chemistry*, New York, Harper and Row, 1964, p. 81.

[17] Joseph published a collection of observations at the Pavia clinic entitled *Ratio instituti clinici Ticinensis a mense Januario usque ad finem Junii 1795*, with a preface by J. P. Frank, Vienna, Camesina, 1797, which was translated into German by F. Schaeffer that same year: see note 11, above.

drugs. Diseases were the result of certain imbalances in the stimuli causing a change in the general state of the body. Since Brown believed that most diseases were asthenic and thus in need of stimulating treatment, general weakness or debility was the predominant state of the diseased body. At Pavia, Joseph often used opium, Peruvian bark, camphor, alcohol, musk, and other stimulating drugs although to a much more moderate extent than did most Brunonians. His experiences in the clinic, especially the death of the young girl from typhus, showed him the negative consequences of the improper and immoderate use of those drugs.

But Joseph did not confine himself to the use of stimulating remedies. He attempted to cure oedema with digitalis; mental disorders with belladonna; and pneumonia, whooping cough, and asthma with seneca roots, ipecac, and tartar emetic. He couched the actions of the drugs within a Brunonian explanatory scheme by stating that these diseases were due to a general weakness of the body and that the drugs acted on this weakness by raising the excitement.[18] For example, oedema was explained as a general weakness of the body (asthenia), especially of those organs responsible for the separation of water. Digitalis excited the body in general and thus acted as a diuretic. Even though Joseph at this time still denied the specific actions of drugs, the fact that he used a large variety of drugs in his treatment already distinguished him from most other Brunonians.

Joseph modified (in many instances just moderated) the Brunonian doctrine in several different ways. Clinical experience had shown him that such infectious diseases as typhus, smallpox, measles, and scarlet fever followed a characteristic and unchanging course despite the administration of stimulants. The use of stimulating drugs in such cases could cause more harm than good.

The truth of this observation was really brought home to him by the tragic death in 1796 of his younger brother Francis from the petechial typhus he contracted while practising in the Vienna clinic. Francis, who had also been an ardent supporter of Brown, had received his medical degree from Pavia. Later he went to Vienna together with Johann Peter and worked as one of his assistants in the Allgemeine Krankenhaus, the General Hospital. Joseph described his death as "one of the most terrible catastrophes of my life".[19] A few days after treating a case of petechial typhus, Francis began feeling very ill. He started taking Dover's powder, which contained ipecac and made him sweat, but to no avail. When he felt himself grow weaker, he began drinking Malaga wine and taking quinine (Peruvian bark). This resulted in a strong diarrhoea, which he treated with opium. Diarrhoea gave way to other nervous symptoms for which he took musk, camphor, blisters, and hot baths, but all in vain. The public, and even some physicians, attributed his death to the Brunonian method.[20] Regardless of the different speculations concerning causes of Francis's death, the fact remains that it had a very sobering effect upon Joseph's Brunonianism.

[18] The therapy employed by Joseph in the Pavia clinic has been analysed in greater detail by F. Aicher, 'Der Einfluss der Brownschen Lehre auf die Therapie. Untersucht an den von Frank im Krankenhaus zu Pavia behandelten Krankheiten', diss., University of Munich, 1933.

[19] J. Frank, *Mémoires biographiques*, I. 28. 545/495.

[20] Ibid., I. 28. 546/496–547/497. This was not the first or only death of a young physician at the General Hospital from what had been called "nosocomial typhus". In fact, several later observers remarked about the poor sanitary conditions and uncleanliness at the General Hospital. See Coste, 'Hôpital', *Dictionaire*

Shortly after Francis's death, Napoleon's army entered Pavia and the university was closed. Joseph had left just before its arrival to join his father in Vienna. There he continued to play an active role in propagating the Brunonian doctrine by organizing a group of young medical men into a private medical society similar to the one in Pavia. In his hospital and clinical practice he was particularly preoccupied with the treatment of febrile diseases, especially typhus. No doubt the death of Francis and others had focused his attention on this disease. In his writings, he began to re-analyse the principles of Brown's doctrine in the light of his clinical experience. He wanted to correct those principles that he could, reject those that were false, and, most importantly, pick out the most doubtful ones and make them the objects of further study.

In contrast with Brown, whose position was ambiguous, Joseph considered excitability to be a property of matter, which manifested itself in different ways depending on the material composition of the organs. Thus excitability could become irritability in the muscle, and sensibility in the nerve. Since excitability was identified with matter and could be expressed differentially in the body fabric, the structural organization of the different organs was important. Because organs differed in their function and organization, drugs would affect each of them differently. Diseases with such different characteristics could not all arise from one cause, namely asthenia or weakness.[21]

This was a major departure from Brown, who denied that there could be any kind of *qualitative* changes associated with excitability. Differences in the way stimuli affected excitability were purely *quantitative* and thus subject to mathematical analysis. Joseph ignored Brown's exact mathematical calculations of excitability and called the degree chart "nonsense". For him, the important criterion in choosing drugs was the diseased organ or organ system.

We thus see Joseph slowly starting to take the steps which would soon disengage him from the monistic concept that all diseases could be viewed as the result of variations in a single property or force, such as excitability. Even though he still closely linked vitality (or life) with a single force or property, the stress that he placed on the importance of organization would eventually lead him closer to the idea that vitality might be associated with that organization, that by means of organization the living being could be distinguished from the non-living. This became a major theme or metaphor of biochemical thought in the late eighteenth and early nineteenth centuries as described by Figlio, Jacob, and others.[22] The general orientation of

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des sciences médicales, eds. F. P. Chaumeton and F. V. Mérat de Vaumartoise, Paris, Panckoucke, vol. 21, 1818, pp. 466–544, and 'Some account of the General Hospital and Medical School at Vienna', *Edinb. Med. Surg. J.*, 1806, **2:** 491–6. Johann Peter himself warned the competent authorities that so many foreign physicians and surgeons were attending the clinical lectures that "all relation vanished between the space available in the clinic and the number of students". Rosen, op. cit., note 2 above, p. 305.

[21] A chart comparing the views of Brown and Frank on excitability can be found in the article 'Auch eine Geschichte des Brownschen Systems', *Journal der Erfindungen, Theorien und Widersprüche in der Natur und Arzneiwissenschaft* [Gotha], 1796, **19:** 29–30.

[22] K. Figlio, 'The metaphor of organization: an historiographical perspective on the bio-medical sciences of the early nineteenth century,' *Hist. Sci.*, 1976, **14:** 17–53; F. Jacob, *The logic of life*, New York, Pantheon Books, 1973, pp. 74–129.

Joseph's work was clearly to the interior of the body, to its fabric or structure—a very important and necessary precondition for shifting or redirecting his attention to pathological anatomy. This shift was greatly accelerated by his journey, or "scientific voyage" as he called it, to Paris and London in 1802, where his faith in the Brunonian system, and systems in general, was totally shattered.

The new scientific ethos and ideas, especially the emphasis on rational empiricism, in France after the Revolution of 1789 and Great Britain during the Industrial Revolution played an important catalytic role in transforming his medical beliefs. Joseph was particularly influenced by the anti-Brunonian attitude of most of the leading physicians that he met. The advocates of Brunonianism, on the other hand, made a poor impression on him. Most of these he met in Germany on his way to Paris. Such pillars of German Brunonianism as Andreas Röschlaub, Adalbert Marcus, and Melchior Weikard, with whom he had eagerly collaborated in popularizing Brown's ideas, left a very bad impression. He used such terms as "scatter-brained", "conceited", "hypochondriac", and "misanthrope" to describe them.[23]

In Paris, where he met many dignitaries and important political figures including Napoleon I, Joseph spent most of his time visiting medical, scientific, and philanthropic institutions as well as discoursing with leading physicians and scientists.[24] The following list should serve to illustrate the breadth of his acquaintance with the eminent men of French science: Fourcroy, Monge, Berthollet, Chaptal, Laplace, Lacépède, Vauquelin, Guyton de Morveau, Portal, Lalande, Hallé, Pinel, Esquirol, Alibert, Richerand, Larrey, Desgenettes, and Corvisart.[25] These men were at the forefront, shaping the newly emergent French science and medicine: a science which placed particular emphasis on technology and the applied sciences, and a medicine of empirical observations. The sentiment against dogmatism, theorizing, and systematization was very strong.[26]

The French clinicians were particularly skeptical towards general theories and systems in medicine. They strongly attacked Joseph's Brunonianism. The ageing physician and surgeon Antoine Portal (1742–1832) said that he had read many of Joseph's works and that they filled him with both pleasure and pain:

> Pleasure because they showed proof that his talents would qualify him one day to take the place of his illustrious father; pain because he saw him bogged down in a system which, like the French constitution, was beautiful on paper but did not mean anything in practice.[27]

[23] J. Frank, *Mémoires biographiques*, II. 36. 181/195. Their work has been analysed in great detail by G. Risse, 'The history of John Brown's medical system in Germany during the years 1790–1806', PhD. diss., University of Chicago, 1971.

[24] For a description of the institutions that he visited see his *Reise nach Paris, London, und einem grossen Theile des übrigen Englands und Schottlands*, 2 vols., Vienna, 1804–5.

[25] Extracts from the memoirs describing Joseph's journey to Paris entitled 'Le séjour à Paris du Dr. Frank (1803)', have been published in *Bull. Soc. fr. d'Hist. Méd.*, 1924, **18:** 107–24.

[26] This sentiment was summarized nicely by A. F. Fourcroy, a leading spokesman of French science, who said that it was necessary to abandon systems and return to observation as a guide in the study of diseases. Antoine François de Fourcroy, (editor), *La médecine éclairée par les sciences physiques*, [etc.], Paris, Buisson, vol. 1, 1791, p. 142.

[27] 'Le séjour', op. cit., note 25 above, p. 112.

Hallé, Pinel, and Corvisart also criticized Joseph's Brunonian views; Corvisart in particular took great pleasure in "tormenting" him about Brown's system. The students at the Paris medical school were attracted to him because they had never seen a Brunonian and viewed him as a "curiosity". On leaving for London Joseph remarked that his "republican spirit" was entirely extinguished and that his Brunonianism was beginning "to totter".[28]

In Great Britain, the Industrial Revolution had a marked effect on British science. Scientific societies were formed in the new industrial towns. Philanthropic institutions were founded to take care of the sick, the poor, and the homeless. New clinics, hospitals, and vaccination institutes were built. In all the towns that Joseph visited, he first made the acquaintance of the leading physicians, then he went on a tour of the hospitals, clinics, philanthropic and scientific institutions, scientific societies, and prisons.[29] He was interested in seeing how various diseases were treated, how the medical and scientific institutions were organized and administered, and in hearing the ideas and opinions of his contemporaries on various medical subjects.

In Edinburgh he learned that Brown's doctrines had dazzled many students there, who had made use of them in writing their inaugural dissertations, but that all the professors were opposed to them. From Brown's son, William Cullen Brown, he learned about the circumstances surrounding the split between Cullen and Brown, and the numerous hardships and intrigues that Brown endured while in London. He saw the house in which Cullen had lived, and procured a consultation written in his hand. Cullen's memory as a practitioner, Joseph said, was greatly revered by the public of Edinburgh, but his theories had already been forgotten.[30] The new scientific ethos emerging in Great Britain was not conducive to the development of any general system of medicine, be it that of Cullen or Brown. Hypotheses and theories were to be based on experiment and observation. No one system could explain all the varied physiological and pathological phenomena. Thus the emphasis must be on treating individual diseases.

After leaving Bath, where he had visited Drs Falconer, Parry, and Haygarth, he proclaimed, "They have completed detaching me from the system of Brown."[31] And later, reflecting on his journey, he added, "I feel that I have been transformed into another man."[32] The "other man" of whom Joseph wrote was the one critical of systems and broad generalizations, the one who relied on correct diagnosis and treatment of each disease according to its particular requirements.

When Joseph returned to Vienna in December 1803, he had a series of conversations with his father which vividly revealed the transformation that had taken place in his thinking. Johann Peter had already surmised from Joseph's letters that his enthusiasm

[28] Ibid., p. 124.

[29] All of these institutions are described in his *Reise*. Extracts from his memoirs describing the many noted people that he met on this trip were published in the original French by S. Trzebiński in *Pamiętnik Wilenskiego Towarzystwa Lekarskiego*, 1929, **5**: z. 2, pp. 94–102, 200–7, 345–9 and 347–80.

[30] Ibid., pp. 203–4.

[31] Ibid., p. 206.

[32] Ibid., p. 207.

for Brown had waned, but did not know that he had completely renounced the Brunonian system. When Joseph finally made his declaration, Johann Peter was greatly distressed. He said,

> Why go from one extreme to the other? Modify as much as you like the principles which you defended with such ardour and success, but do not renounce them. One cannot teach the practice of medicine without arranging the facts related to that science in a certain order and then linking them together, that's what constitutes a system. That of Brown is defective, as I always told you, but the other systems are equally so. You have suffered so much for your Brunonianism, and now that one could call your victorious, you want to reverse your fortunes?

And Joseph answered,

> My dear father, I would very willingly follow your advice if I weren't convinced that it is precisely in the fundamental principles that the system of Brown is defective. I believe that they are incompatible with the practice of medicine based on experience. And why shouldn't I be able to arrange the result of this practice in some kind of order without subordinating it to a system? If I victoriously defended a cause as bad as Brunonianism, what success awaits me in defending rational empiricism, to which all physicians return sooner or later and which has been extolled by Hippocrates, Sydenham, Baglivi, and others?[33]

It was much easier, he said, to renounce the system of Brown, than to practise medicine at the bedside of the sick with it as a guide.

Joseph stayed in Vienna only eight months after his journey to Paris and London and then, together with his father, mostly for political reasons, left for the University of Vilnius in Lithuania, which was then a part of the Russian Empire. There Joseph worked for nearly 20 years and put into practice his "new" medical beliefs.

The first annual report of the Vilnius clinic, published in 1803, marked Joseph's formal break with the Brunonian system.[34] When discussing his earlier support of Brown he emphasized that he never completely agreed with all of Brown's ideas and that, on the contrary, he had brought to light and analysed several mistakes or false hypotheses made by Brown. He admitted that his biggest mistake was in thinking that all of medicine could be explained within the context of one system, and that he was ashamed of the "fetters" with which the love of this system had bound him. Observation and reason were now to be the base of his medical practice. Experience of the greatest physicians, observation of what kinds of treatment were most useful, and consideration of the climate and time of year were the medical principles according to which he was going to structure his practice. Thus, in his first clinical report from Vilnius, he described the medical topography of the Vilnius area and the diseases prevalent there during 1805–6. In his lectures on pathology and special therapeutics he used his father's textbook (*De curandis hominum morbis epitome*) and that of G. Borsieri (*The institutions of the practice of medicine*). He began making plans to write

[33] Ibid., pp. 378–9 (with corrections from the original manuscript of the memoirs).

[34] J. Frank, *Acta instituti clinici caesareae universitatis Vilnensis*, 3 vols., Leipzig, 1808–12. Volumes one and two were translated into German by J. Meyer as *Annalen des klinischen Instituts an der Kaiserlichen Universitaet zu Wilna*, Berlin, 1810, especially pp. 1–29. I disagree with the recent article by Bozena Plonka-Syroka, which argues that Joseph's break with Brunonianism occurred in 1822: 'Józef Frank i Jędrzej Śniadecki wobec doktryny Johna Browna', *Archwm Hist. Filoz. Med.*, 1986, **49**: 359–74.

his own medical textbook. The treatise that he envisioned certainly reflected the transformation that he had undergone:

> . . . I particularly have in mind a work confined to facts, with the exclusion of all hypotheses, unless they are mentioned in an historical account, or to show the errors to which the mania of wanting to explain everything can lead.[35]

Shortly before the first clinical report from Vilnius appeared in print, Joseph received a letter from Corvisart (dated 30 December 1807) with the following comment on Joseph's break with the Brunonian doctrine:

> I confess, from the bottom of my heart, that I was charmed to learn that you have broken with Brown. I have always thought that it was dangerous in practice to adopt any system, and that of Brown, like all the others, has sacrificed many victims. It has always appeared to me that all theories should vanish at the bedside of the sick; and woe to that practitioner who substitutes system for experience.[36]

Joseph was able to continue his work in Vilnius for another five years before war again disrupted his life and practice. Napoleon began his Russian campaign in 1812. For the Poles and Lithuanians, who greeted Napoleon as their liberator, the war of 1812 meant a brief moment of joy followed by disappointment and vast devastation. In the space of a year, more than a million combatants passed through Lithuania, bringing with them suffering, death, and epidemic diseases. In Joseph's clinic, which served as a military hospital, the pathological specimens that were part of the anatomical pathology museum were devoured by hungry French soldiers.[37] The sick devoured one another. It is estimated that about 80,000 cadavers were buried in and around Vilnius; the decimated population of Vilnius itself was ravaged by disease. The medical institutions that Joseph worked so hard to establish were ruined.

Joseph and his family had left for Vienna a few months before Napoleon and his troops entered Vilnius, but he witnessed the aftermath of the war when he returned in the summer of 1813. This provoked him to write a discourse on the effect of the French Revolution on medicine—*De l' influence de la Révolution Françoise sur des objets relatifs à la médecine pratique* (1814). His early fascination with democratic ideals had already been "shattered" by his journey to Paris in 1803. But now the effects of the Revolution had made a more immediate, personal impression. This discourse, written in a highly polemical style, gives us an interesting glimpse of how a conservative physician working in an absolutist state viewed the effects of the French Revolution on medicine.

On the whole, Joseph presented a fairly negative evaluation of the French Revolution. The sum of evils, he felt, prevailed considerably over that of good. Most universities were ruined, the book trade was almost destroyed, many excellent

[35] J. Frank, *Mémoires biographiques*, III. 53. 205/168.

[36] Ibid., III. 53. 245/209. In two of his letters to Dr Alexander Marcet of London, dated 9 November 1804 and 20 May 1805, Joseph mentioned his break with Brown and the influence of the journey to Great Britain. These letters are preserved in the Manuscript Division of the National Library of Medicine, Bethesda, MD.

[37] J. Frank, *Mémoires biographiques*, IV. 64. 121.

physicians died, the correspondence between physicians of different countries was abolished, and speculative thought replaced observation and experience. He attributed the spread of atheism, materialism, and Brown's medical system to the negative influences of French thought and the revolutionary spirit. Brown's system reached the Continent at the time that the principles of the French Revolution had "inflamed" everyone, especially the youth. Everyone aspired then to novelty. Authority did not count. The "great truths" discovered by the Scottish reformer were often described by his followers with the "eloquence of Danton and Robespierre"; but Brown's system was quite similar to the democratic constitutions which "appear brilliant on paper but which fail as soon as they are tried".[38] Once the "Brownian Revolution" began, medical systems succeeded one another as constitutions did within the political realm. Few physicians remained unaffected. The apparent bitterness with which Joseph viewed the effects of the French Revolution were obviously coloured to a great degree by his disillusionment with his earlier adherence to Brown as well as by the negative impact of the Napoleonic wars on public health in Vilnius.

Joseph did admit that the Revolution produced some good. It contributed to the regeneration of medical education in Paris, the application of such sciences as physics to medicine, the establishment of experimental clinics ("designed to test new remedies and new methods, treat rare or unknown diseases and educate particularly talented students"), the union of medicine and surgery, as well as to the improvement of surgery. Nevertheless, the revolutionary wars also produced and spread contagious fevers. Even more damaging to public health, in Joseph's opinion, than the revolutionary and military events was the economic crisis that they produced throughout Europe. The Continental System, Napoleon's plan to blockade England, made it difficult to import drugs. Consequently the price of drugs rose so much that only the rich could afford them. But Joseph was glad that the war was over and that for the first time in twenty years he could witness the opening of schools "without the noise of arms around".

In Vilnius, Joseph's old role as defender and propagator of the Brunonian doctrine was now completely reversed. His efforts to imbue the physicians of Lithuania and Poland with the new spirit of rational empiricism inevitably brought him into confrontation with the Vilnius Brunonians.[39] But eventually he prevailed.

Joseph's opposition to medical systems was not limited to Brown but extended to all theories and hypotheses that attempted to fit medicine within a single explanatory scheme, including those of Broussais and the German *Naturphilosophen*. This does not mean that he was opposed to theory in medicine, only that he felt medical theory and practice should reflect one another. Medical theory not based on bedside observation was purely speculative. Medical practice without theory was blind empiricism. This point of view had emerged as the core of rational-empirical

[38] J. Frank, *De l'influence de la révolution françoise* [etc.], Vilnius, 1814, p. 7.

[39] In the memoirs Joseph described two cases where he had to do battle with his chief opponent, the pathologist A. Bécu, over the Brunonian doctrine. *Mémoires biographiques*, III. 51. 109/88 and III. 53. 193/164. They are also described by S. Trzebiński, op. cit., note 3 above, pp. 121–2.

medicine. The many medical institutions which Joseph founded in Vilnius on this basis were to be a bulwark against speculative medicine.[40]

Joseph Frank's encounter with the medical system of John Brown illustrates well the ways in which medical theory and practice interacted, and especially those factors which influenced many young physicians in Germany and Italy to adopt that system. By organizing all of medicine around a few, simple, fundamental principles and by appealing to solidism as well as the experimental philosophy of Newton and Bacon, Brown's medical system seemed to offer a viable alternative to the humoralism against which the young physicians rebelled. Yet, at the bedside, Brown's one-sided therapy of stimulation and simplistic diagnostic categories were unable to deal adequately with the complexity of disease phenomena. At first, Joseph tried to modify Brown's system so that it could be applied at the bedside, but finally "deserted it" and all medical systems. His trip to France and Great Britain, where he came into close contact with the new scientific ethos and the spirit of rational empiricism, played an important role in that transformation.

Joseph Frank's experience was not unique, but symptomatic. It reflected the greater changes occurring in medicine at that time, especially in the evolution of clinical medicine.

[40] Descriptions of some of the institutions founded by Joseph Frank in Vilnius and of his efforts to reform the medical faculty at the University can be found in R. Kondratas, 'The medical ideas and clinical practice of Joseph Frank (1771–1842)', *Acta Congressus Internationalis XXIV Historiae Artis Medicinae*, Budapest, 1976, vol, pp. 425–32, and 'Medical Reforms at the University of Vilnius in the beginning of the nineteenth century," in Gert von Pistohlkors and others, (editors), *The Universities in Dorpat/Tartu, Riga and Wilna/Vilnius 1579–1979*, Cologne, Böhlau, 1987, pp. 87–104.