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HOMEOPATHY: A FRONTIER IN MEDICAL SCIENCE

EXPERIMENTAL STUDIES AND THEORETICAL FOUNDATIONS

TEXT without figures

2. BASIC PRINCIPLES AND BRIEF HISTORY OF HOMEOPATHY

Homeopathic medicine is a clinico-pharmaceutical system which uses microdoses of substances derived from plants, minerals or animals for the purposes of stimulating the natural healing response [Coulter, 1976; Dujany, 1978; Vithoulkas, 1980; Reckeweg, 1981; Charette, 1982; Julian and Haffen, 1982; Meuris, 1982; Barros and Pasteur, 1984; Del Giudice and Del Giudice, 1984; Lodispoto, 1984; Bianchi, 1987; Gibson and Gibson, 1987; Brigo and Masciello, 1988; Tetau, 1989; Ullman, 1991a; Bianchi, 1990; Granata, 1990; Mossinger, 1992]. This system claims to cure diseases using drugs (usually called “*remedies*”) which are prepared according to particular procedures of dilution and dynamization and chosen according to a complex methodology based essentially on the so-called “*law of similars*.²”

2.1. The law of similars

The “law” or “principle” of similars (or similarity) constitutes the main acquisition of homeopathy and the basis for its understanding, though today, as we shall see, it is no longer regarded as a universal “law” valid in all cases. According to this principle, which already figured in certain medical and philosophical systems of antiquity (Hippocrates, St. Augustine, Paracelsus), but which was rediscovered mainly by the German physician Samuel Hahnemann (1755-1853), a disease can be cured by administering the patient a substance which, in healthy human subjects, causes symptoms similar to those of the disease (hence the dictum “*similia similibus carentur*” [Hahnemann, 1796]). In practice, this means that:

- a) Every biologically active substance (drug or remedy) produces *characteristic symptoms* in healthy bodies which are *susceptible* to being in some way perturbed by that substance.
- b) Every sick body expresses a series of *characteristic symptoms* which are typical of the pathological alteration of that *particular* subject.
- c) The healing of a sick body, characterized by the progressive disappearance of all symptoms, may be obtained by targeted administration of the drug which produces a similar symptom picture in healthy bodies.

For example, the homeopath, starting from the observation that bee venom causes a characteristic wheal with pain and erythema mitigated by the application of cold compresses, administers bee extract in a homeopathic presentation (diluted and dynamized) to cure patients presenting urticaria with wheals and pain similar to those of bee stings, albeit of different etiology.

In its early formulations, which are still present in a number of schools, the remedy is prescribed not only on the basis of the diagnosis, this being of secondary importance, but also by seeking with the utmost care the correspondence between the symptomatological picture of the disease and the symptom picture caused by a given substance in healthy subjects. If the match is substantial or perfect (the remedy is a “*simillimum*” or “most similar medicine”), the administration even of only a minimum dose of the remedy

triggers a reaction in the patient which leads, often after an initial aggravation of the disease, to healing. The healing, then, would appear not to be a direct suppressive effect of the substance administered ("law of opposites"), but the result of the subject's reaction, due, according to classic homeopathy, to the action of the so-called "*vital force*" [Hahnemann, 1994].

For the purposes of identifying the remedies most suited to the individual circumstances, the homeopathic pharmacopoeia has been gradually built up right from the early days of homeopathy on the strength of tests of a "toxicological" type, performed by administering small doses of a whole variety of substances to healthy volunteers and painstakingly recording the symptomatological results as soon as a reaction is observed. These experiments, called *drug provings*, have been collected in the so-called *materia medicas* (encyclopedias of drug effects), which have been and are being continually updated and contain data on hundreds of different mineral, vegetable, and animal substances. The *materia medicas* have been and continue to be checked, modified, and updated also on the basis of the experience gained with patients. In fact, for a particular remedy to be introduced and used in the homeopathic pharmacopoeia, it is not enough for it to be capable of causing symptoms in a healthy subject; it must show proven ability to cure patients presenting the symptoms detected during the provings.

Another aspect which should be stressed, inasmuch as it is a recurrent feature of the literature, is the fact that, in this patient, thorough analysis of the symptoms (called *repertorization*), a great deal of importance is attributed to the more unusual symptoms, which may reveal a particular type of individual reactivity, as well as to those in the psychological sphere, which are regarded as no less important than the somatic symptoms. Correct repertorization, in fact, requires an analytical and at the same time a holistic all-embracing approach to the sick person. According to homeopathic methodology, it is only in this way that the correct choice of drug indicated for each patient can be made.

The concept of the choice of drug on the basis of the law of similars can be illustrated here with an example [Gibson and Gibson, 1987]. Three patients with influenza are treated with three different remedies: the first patient presents chills, is anxious and restless, and wants to be covered up and drink fresh water; his eyes and nose are producing an irritating mucous runny discharge causing reddening of the nose and upper lip; he also presents gastrointestinal symptoms (vomiting and diarrhea). The remedy indicated for this patient is *Arsenicum album* (arsenic). The second patient with influenza in the same epidemic feels tired and lethargic, experiences chills, and complains of occipital headache; he wants something to warm his back, wants to stay stock-still in bed, and not make any kind of physical effort. In this case the remedy indicated is *Gelsemium* (yellow jasmine). The third person has influenza with a feverish temperature and the most striking symptom is achiness throughout the entire body, as if all his bones were broken. The remedy indicated in his case is *Eupatorium perfoliatum* (boneset). All three patients have contracted the same influenza virus, but their individual reactions to the disease are different and thus their treatment has to be differentiated.

To the homeopathic practitioner, a symptom like fever says very little, in that it is a very nonspecific reaction of the inflammatory process, but he will take great care to analyze the types of fever and the concomitant symptoms as a guide to establishing the right remedy: fever with heat sensations, reddening of the skin, perspiration, a very high pulse rate, a throbbing headache, mydriasis, and photophobia indicates that the patient needs *Belladonna* (deadly nightshade). Fever of sudden onset after a cold, with anxiety even to the point of fearing death, reddening of the skin (without perspiration), and a strong, hard pulse, but also with miosis, intense thirst, and an aversion to blankets, indicates *Aconitum* (monkshood) as the remedy of choice. It is thus particular details and subtle differences which guide the doctor in his choice.

2.2. Homeopathic drugs (or "remedies")

Not only the clinical methodology, but also the preparation of the substances used in homeopathy is quite unique. As is known, they are produced by means of a process of serial dilution and succussion aimed at endowing the solutions with a greater therapeutic effect (*dynamization*).

There are precise historical reasons for the use of highly diluted substances: many substances which right from the outset were tested and introduced into the homeopathic pharmacopoeia were of empirical origin, derived from biologically highly potent or toxic compounds, such as certain mineral elements, organic and inorganic chemical poisons, and animal or plant poisons. The symptoms they caused were deduced from accidental intoxication, but obviously they could not be used as such in human experimentation. It was thus

that their effects were tested in healthy subjects (provings) and in patients (curative homeopathy) at low and very low doses, administered repeatedly until symptoms appeared (or disappeared, as the case may be).

In the course of these initial trials, Hahnemann himself claimed to have observed the following phenomena:

a) If a patient needed a remedy, i.e. if there was a match within the framework of the law of similars, he or she tended to be very sensitive to the remedy itself. Thus, the doses necessary and sufficient to obtain a positive reaction, were much lower than those needed to cause symptoms in healthy subjects or to cure a sick person who did not present a perfect symptom match.

b) On the strength of this observation, he began to dilute the remedies in order to find curative doses that did not produce unwanted side effects. Experience led him to note an increase in the curative potency on reducing the dose, i.e. on increasing the dilutions.

c) The early dilution procedures also included the process of succussion or trituration of the raw materials (according to whether they were liquid or solid) for a wholly practical reason, consisting in the homogeneousness of the diluted product; only later was it observed that this procedure was necessary to increase the effect of the dilutions. For this reason the progressively increasing dilutions were also called *potencies* and the dilution and succussion process was called *potentization* or *dynamization*.

In practice, the raw materials are extracted by solubilization in alcohol containing various percentages of water, or, if insoluble, they are initially pulverized and triturated with lactose and then diluted in a water-alcohol solution. The initial solutions, containing the maximum concentrations of active ingredients, are called *mother tinctures* (MT). Successive dilutions are then operated, followed by vigorous shaking.

The preparation techniques for the various types of remedies used today are codified in detail in the various pharmacopoeias, the most important of which are the French and German ones, though there is a tendency to find a consensus, at least at the level of the European Union.

The most commonly used dilutions/potencies are: 1:9 (labelled "D," "DH," "X," or "x"), when 1 part of the most concentrated solution is diluted in 9 parts of solvent; or 1:99 (labelled "C," "CH," or "c"), when 1 part of the most concentrated solution is diluted with 99 parts of solvent. There are also dilutions labelled "LM," based on 1:50,000 serial dilutions, and even *Korsakowian* dilutions (labelled "K"), based on dilutions produced by emptying the recipient containing the most concentrated solution, leaving a few droplets in the bottom, and filling it with solvent (obviously, this latter method is harder to standardize, despite being simple to perform). Lastly, mechanized continuous-flow procedures are also used today.

It is well known that often - though not as a rule - extremely high dilutions are used, with the result that theoretically there is no longer so much as a single molecule of the original substance remaining. This constitutes one of the cornerstones of homeopathy, and at the same time is perhaps the main problem which research is called upon to confirm and possibly explain.

Another very important point has to do with the so-called *dynamization*. In the procedure for the preparation of homeopathic drugs, the rule is that, after each dilution, the resulting solution be subjected to vigorous shaking. Classic standard practice prescribes 100 downward shakes, but other succussion procedures have been developed, including automated techniques.

Lastly, there are also preparations in granule or globule form, consisting in small spheres of sucrose or lactose impregnated with the Hahnemann dilution, from which they take their name. For example, *Arnica montana* (mountain daisy) 9c granules are granules which have been impregnated with the 9c dilution of *Arnica montana*.

Further details on the preparation techniques for homeopathic remedies can be found in other reviews [Vithoulkas, 1980; Del Giudice and Del Giudice, 1984; Brigo and Masciello, 1988; Winston, 1989; Majerus, 1991].

2.3. Hahnemann's Organon

The history of homeopathy [Lodispoto, 1984; Gibson and Gibson, 1987; Haehl, 1989; Majerus, 1991; Ullman, 1991a; Ullman 1991b] begins with the ideas and discoveries of its founder C.F.S. Hahnemann. It was he who first coined the term homeopathy from the Greek *homoios* ("similar") and *pathos* ("suffering"), referring to the law of similars which is its basis. Hahnemann's first real insight into the law of similars came in 1789, when he was translating a book by W. Cullen, one of the most eminent physicians of the era. At a certain point, Cullen attributed the efficacy of Peruvian bark (cinchona) in the treatment of malaria to its

bitter and astringent properties. Hahnemann, who was also an expert chemist and keen experimenter, was not happy with this explanation, since he was well aware that there were many other more bitter and astringent substances than Peruvian bark, which, however, were devoid of efficacy in antimalarial treatment. He therefore began to experiment on himself by taking repeated doses of Peruvian bark extract until he reached a stage where he started to manifest fever, chills, and other symptoms similar to those of malaria.

Hahnemann thought that the reason for the efficacy of Peruvian bark in patients suffering from malaria had in some way to be related to the fact that this substance caused symptoms similar to those of the disease it was used to treat. He then tested other drugs in use at the time on himself as well as on friends and relatives, and, using his vast knowledge of botany, chemistry and toxicology, he studied the effects of many plants and medicinal substances. Over the next 20 years, on the basis of patient and meticulous provings, he laid the foundations for the *materia medica*. As early as 1796 he published an article [Hahnemann, 1796] in which he indicated the existence of three types of approach to the treatment of disease: the first (which he defined as the most "sublime") consisted in removal of the cause, if known; the second type consisted in treatment by means of opposites, in other words treatment which he defined as "palliative," such as, for instance, the use of laxatives for constipation; the third type was treatment by means of similars, which he regarded as the only valid approach, apart from prevention. He also suggested the importance of diet, physical exercise, and hygiene, factors which at that time were practically ignored by medical science.

In addition to his activity as a medical practitioner and experimenter, Hahnemann wrote many articles and books, in which he laid the foundations for the entire edifice of homeopathy [cf. review by Aulas and Chefdeville, 1984]. The first complete text on homeopathy was published under the title *Organon of Rational Medical Science* in 1810. Nine years later, in 1819, a second edition of the work was published, entitled *Organon of the Art of Healing*, which was then followed by other editions, up to the sixth, published posthumously in 1921. It obviously encompasses Hahnemann's complete thinking, as well as all the wealth of experience of the author and his followers, who applied and publicized homeopathy in the early decades of the nineteenth century. In view of the historical importance and also the intrinsic cultural interest of the *Organon*, it may be worth devoting more than merely passing attention to the text and quoting some of its more significant statements. The quotations cited here are from the *Organon of Medicine* edited by Joseph Reves, from the 5th and 6th editions [Hahnemann, 1994].

The *Organon* was written as a series of 291 paragraphs and starts with this basic claim: "*The physician's highest and only mission is to restore the sick to health, to cure, as it is termed.*" Then, in a footnote to the first paragraph, we read: "It is not, however, to construct so-called systems, by interweaving empty speculations and hypotheses concerning the internal essential nature of the vital processes and the mode in which diseases originate in the invisible interior of the organism, (whereon so many physicians have hitherto ambitiously wasted their talents and their time)... in order to astonish the ignorant - whilst sick humanity sighs in vain for aid." These sentences effectively convey the main objective of a physician who was always actively engaged in medical practice, as well as revealing his combative and fairly undiplomatic character, which made no small contribution towards getting him ostracized by most of the medical establishment of his day and age.

The claim as to the primacy of practical interests over the construction of theories and hypotheses regarding "*the internal essential nature of the vital processes and the mode in which diseases originate in the invisible interior of the organism*" can be explained on the grounds of the scientific backwardness of the era (early nineteenth century), in which really very little was known about such processes. On the other hand, such a claim might appear thoroughly unscientific: for a scientist, giving up any attempt to understand the mechanisms underlying vital processes is unacceptable. In actual fact, the most likely interpretation of this first paragraph is that Hahnemann was not disputing the study of the natural laws governing the functioning of vital processes, since all the rest of the work bears witness to a substantial rational and investigatory effort, this being the only approach allowing an effective form of therapy based on real awareness. The author, evidently, wished to stress that the "*internal essential nature*" of vital processes is unknowable, and in this sense his claim could hardly be more modern, in the light of recent discoveries regarding biological complexity and chaotic systems, as we shall see in detail below (Chapters 5 and 6). It is likely that the author also intended to criticize those in medicine who limited themselves to devising hypotheses and theories which, though appearing complicated and astonishingly impressive, actually proved utterly useless when it came to solving the patients' practical problems.

In the third paragraph, Hahnemann states: "If the physician clearly perceives what is to be cured in diseases, that is to say, in every individual case of disease (*knowledge of disease, indication*), if he clearly

perceives what is curative in medicines, that is to say, in each individual medicine (*knowledge of medicinal powers*), and if he knows how to adapt, according to clearly defined principles, what is curative in medicines to what he has discovered to be undoubtedly morbid in the patient, so that the recovery must ensue - to adapt it, as well in respect to the suitability of the medicine most appropriate according to its mode of action to the case before him (*choice of the remedy, the medicine indicated*), as also in respect to the exact mode of preparation and quantity of it required (*proper dose*), and the proper period for repeating the dose; - if, finally, he knows the obstacles to recovery in each case and is aware how to remove them, so that the restoration may be permanent: *then he understands how to treat judiciously and rationally, and he is a true practitioner of the healing art.*" In the fourth paragraph we read: "He is likewise a preserver of health if he knows the things that derange health and cause disease, and how to remove them from persons in health." These quotations could hardly fail to be endorsed by any medical practitioner operating today, but, in the pre-scientific medical context obtaining at the time, they undoubtedly represented a novel and original approach. The whole basis of Hahnemann's clinical reasoning - and thus of homeopathy - is avowedly rational and logical.

The reasoning of the *Organon* proceeds in the following paragraphs with the statement that the fundamental factor in man's state of health is the "*vital force*" and that any disturbance of this "*dynamic inner principle*" is responsible for onset of disease, just as, conversely, the "*restitutio ad integrum* of the vital force necessarily presupposes the return to health of the entire organism" (Paragraph 12). The author was certainly perfectly aware of the existence of pathogens and was fully familiar with the work of his contemporaries, including Sydenham, Jenner, and others (paragraph 38), but strongly emphasized factors related to the medium, host, and subject.

Paragraphs 29-31 clearly define what Hahnemann meant by disease, i.e. "*every disease (not entirely surgical) consists only in a special, morbid, dynamic alteration of our vital energy*" (paragraph 29), whereas the pathogens are only trigger factors: "The inimical forces, partly psychical, partly physical, to which our terrestrial existence is exposed, which are termed morbific noxious agents, do not possess the power of morbidly deranging the health of man unconditionally; but we are made ill by them only *when our organism is sufficiently disposed* and susceptible to the attack of the morbific cause that may be present, and to be altered in its health, deranged and made to undergo abnormal sensations and functions - hence they *do not produce disease in every one nor at all times*" (Paragraph 31). Also in the presence of this key passage of the original theory of homeopathy we are amazed at how concepts which have only recently been espoused by the modern sciences of pathology and immunology could be so clearly perceived and expressed over 150 years ago.

The concept of *vital force* (paragraphs 9-17) has aroused a great deal of discussion. The author undoubtedly ascribed an "*intangible*" essence to what he understood as vital force (paragraph 10) and, being a man of strong religious beliefs, he also called it the "*spirit-like dynamis*" (Paragraph 16). We should not, however, mistake his statements for an arbitrary attempt to resort to metaphysics. In his day and age, talking about a vital force as something mysterious was simply a way of acknowledging the body's ability to defend and heal itself, without being in a position to provide any explanation of it in physiological or immunological terms. The author himself, in a footnote to paragraph 31, says: "When I call disease a derangement of man's state of health, I am far from wishing thereby to give a hyperphysical explanation of the internal nature of diseases generally, or of any case of disease in particular..." The criticism of Hahnemann's notion of life force is therefore anachronistic and ill-conceived: life force is no more than a metaphor to indicate *a dynamic self-regulatory capability which all living creatures are undeniably endowed with* in order to give them a better chance of survival. That this capability is simply the fruit of evolution or, as Hahnemann puts it, a gift of God (note to paragraph 17), is a problem akin to that of the origin of the universe, which, because of its philosophical implications, goes beyond the bounds of scientific investigation.

Be that as it may, while maintaining a clear distinction between metaphysical and scientific issues, there can be no doubt that, right from the outset, homeopathy has always represented a form of medicine which is very open to the spiritual dimensions of human existence. As Hahnemann himself affirms: "In the healthy condition of man, the spiritual *Vital Force* (autocracy), the dynamis that animates the material body (organism), rules with unbounded sway, and retains all the parts of the organism in admirable, harmonious, vital operation, as regards both sensations and functions, so that our indwelling, reason-gifted mind can freely employ this living, healthy instrument for the higher purpose of our existence" (Paragraph 9).

In the following paragraphs (32-70) the author expounds the experiences and reflections that led him to formulate the law of similars, defined as "*the great, the sole therapeutic law of nature: cure by symptom*

similarity!" (Paragraph 50). These experiences are based on careful observation of the courses of natural diseases and the interactions between similar or different diseases, on the effect of smallpox vaccines, on experiments with remedies tested in healthy and sick persons, and on noting the deficiencies of the allopathic approach (paragraphs 54-61, an uncompromising indictment of therapies based on Galen's law of the "*contraria contrariis*" and of other widespread practices at the time such as purging and bloodletting, or the administration of alcoholic beverages and opium).

The explanation of the efficacy of cures using "similars" is given in paragraphs 63-68 and is based essentially on the concept of activation of the reactive response of the vital force: "Every agent that acts upon the vitality, every medicine, deranges more or less the Vital Force, and causes a certain alteration in the health of the individual for a longer or a shorter period. This is termed *primary action*. Although a product of the medicinal and vital powers conjointly, it is principally due to the former power. To its action our Vital Force endeavours to oppose its own energy. This resistant action is a property, is indeed an automatic action of our life-preserving power, which goes by the name of *secondary action or counteraction*" (Paragraph 63).

Many examples are adduced, including: "Excessive vivacity follows the use of strong coffee (primary action), but sluggishness and drowsiness remain for a long time afterwards (reaction, secondary action), if this be not always again removed for a short time by imbibing fresh supplies of coffee (palliative). After the profound stupefied sleep caused by opium (primary action), the following night will be all the more sleepless (reaction, secondary action). After the constipation produced by opium (primary action), diarrhea ensues (secondary action); and after purgation with medicines that irritate the bowels, constipation of several days' duration ensues (secondary action). And in like manner it always happens, after the primary action of a medicine that produces in large doses a great change in the health of a healthy person, that its exact opposite, when, as has been observed, there is actually such a thing, is produced in the secondary action by our Vital Force" (Paragraph 65).

As a result of this principle, by experimentation in healthy human subjects we can know the primary and secondary effects of a large number of remedies, which is precisely what Hahnemann did. "There is, therefore, no other possible way in which the peculiar effects of medicines on the health of individuals can be accurately ascertained - there is no sure, no more natural way of accomplishing this object, than to administer the several medicines experimentally, in moderate doses, to *healthy* persons, in order to ascertain what changes, symptoms and signs of their influence each medicine individually produces on the health of the body and of the mind; that is to say, what disease elements they are able and tend to produce, since, as has been demonstrated, all the curative power of medicines lies in this power they possess of changing the state of man's health, and is revealed by observation of the latter. Not one single physician, as far as I know, during the previous two thousand five hundred years, thought of this so natural, so absolutely necessary and only genuine mode of testing medicines for their pure and peculiar effects in deranging the health of man, in order to learn what morbid state each medicine is capable of curing, except the great and immortal Albrecht von Haller. (...) I was the first that opened up this path, which I have pursued with a perseverance that could only arise and be kept up by a perfect conviction of the great truth, fraught with such blessings to humanity, that it is only by the homeopathic employment of medicines that the certain cure of human maladies is possible" (Paragraphs 108,109).

The author of the *Organon* shows his flair as a keen experimenter and his unquestioned moral stature in this other passage: "As certainly as every species of plant differs in its external form, mode of life and growth, in its taste and smell from every other species and genus of plant, as certainly as every mineral and salt differs from all others, in its external as well as its internal physical and chemical properties (which alone should have sufficed to prevent any confounding of one with another), so certainly do they all differ and diverge among themselves in their pathogenetic - consequently also in their therapeutic - effects. If this be pure truth, as it undoubtedly is, then no physician who would not be regarded as devoid of reason, and who would not act contrary to the dictates of his conscience, the sole arbiter of real worth, can employ in the treatment of diseases any medicinal substance but one with whose real significance he is thoroughly and perfectly conversant, *i.e.*, whose positive action on the health of healthy individuals he has so accurately tested. (...) In all former ages - posterity will scarcely believe it - physicians have hitherto contented themselves with blindly prescribing for diseases medicines whose value was unknown, and which had *never been tested* relative to their highly important, very various, pure dynamic action on the health of man; and, moreover, they mingled several of these unknown medicines that differed so vastly among each other in one formula, and left it to chance to determine what effect should thereby be produced on the patient. This is just as if a madman should force his way into the workshop of an artisan, seize upon *handfuls of very different*

tools, with the uses of all of which he is quite unacquainted, in order, as he imagines, to work at the objects of art he sees around him. I need hardly remark that these would be destroyed, I may say utterly ruined, by his senseless operations” (Paragraphs 119 and 168-169).

The *Organon* then goes on to describe in detail all the procedures used both in the experiments (“provings”) in groups of healthy volunteers and for the use of the homeopathic method in clinical practice. These practical and applicational aspects lie outside the scope of this book, and therefore we refer the interested reader to the original work, which, in any event, would be quite difficult to summarize here.

The last part of the treatise describes the preparation of homeopathic remedies (trituration, extraction of the active ingredients, various methods of dilution and dynamization), aspects which are clearly important as regards the problem of their possible mechanism of action: “The homeopathic system of medicine develops for its special use, to a hitherto unheard degree, the inner spirit-like medicinal powers of the crude substances by means of a process peculiar to it and which has hitherto never been tried, whereby only they all become immeasurably and penetratingly efficacious and remedial, *even those that in the crude state give no evidence of the slightest medicinal power on the human body*. This remarkable change in the qualities of natural bodies develops the latent, hitherto unperceived, as if slumbering hidden, dynamic powers which influence the life principle, change the well-being of animal life. This is effected by mechanical action upon their smallest particles by means of rubbing and shaking *and through the addition of an indifferent substance, dry or fluid, are separated from each other*. This process is called *dynamizing, potentizing* (development of medicinal power) and the products are dynamizations or potencies in different degrees. (...) On this account it refers only to the increase and stronger development of their power to cause changes in the health of animals and men if these natural substances in this improved state, are brought very near to the living sensitive fibre or come in contact with it (by means of intake or olfaction)” (Paragraphs 269, 295).

The problem of the routes and modalities of administration is also addressed. In paragraph 272 the author ascribes the effect of the medicine to contact with the nerves of the tongue and oral cavity, and later (paragraph 284) adds that, in addition to the tongue, mouth, and stomach, also the airways (inhalation) and skin (friction) are potential administration routes for the medicines.

As regards the doses, Hahnemann asks himself “how small, in other words, must be the dose of each individual medicine, homeopathically selected for a case of disease, to effect the best cure?” (Paragraph 278); he recommends the use of the lowest possible doses, but does not establish rigid criteria, claiming, amongst other things, that to solve this problem “is, as may easily be conceived, not the work of theoretical speculation. (...) Pure experiment, careful observation of the sensitiveness of each patient, and accurate experience can alone determine this *in each individual case*” (Paragraph 278).

More important than the dose is the correct choice of remedy, which must be the one most closely matching the patient's symptom picture and his or her particular sensitivity to the drug: “And because a medicine, provided the dose of it was sufficiently small, is all the more salutary and almost marvellously efficacious the more accurately homoeopathic its selection has been, a medicine whose selection has been accurately homoeopathic must be all the more salutary the more its dose is reduced to the degree of minuteness appropriate for a gentle remedial effect” (Paragraph 277).

An analysis of the basic content of the *Organon* is of interest not merely from the historical point of view, in the sense that it constitutes the cornerstone of the entire homeopathic edifice, but also because even today it is still the main reference text for anyone wishing to learn about homeopathy. In actual fact, despite the fact that at a very early stage (even during Hahnemann's lifetime, as he mentions in his works) various different schools of thought and different methodological orientations were to emerge in homeopathy, the authority of the founder has always remained of paramount importance. It may indeed seem most surprising that the basic principles and methodologies discovered by Hahnemann have practically never been questioned, disputes, if any, being confined to the interpretation of his teachings.

At the same time, another indicative aspect is the fact that over the following 150 years Hahnemann's homeopathic disciples never saw fit to operate any very substantial revision of his original insights and discoveries in more up-to-date terms. The reasons for this are probably related to the fact that homeopathy presented itself as an effective curative method, based on very mysterious and almost unfathomable principles, which therefore were essentially indisputable. A procedure which claims to work, but without any very substantial scientific explanation, can only be accepted or rejected according to personal experience. It is also undeniable that the fact that this therapeutic approach was developed without reference to any kind of pathophysiological explanation (Hahnemann even went so far as to claim that there was no point in searching for the “hidden causes” of disease) is the main obstacle to its acceptance. On the other hand, any attempt to

provide a rational explanation of how the law of similars and microdoses works is a daunting task, even with all the knowledge and instruments available to us today, and thus, in a certain sense, the refusal on the part of the world of homeopathy to undertake serious scientific research is justifiable. As we shall see, it was only recently that homeopaths began to do something about this state of affairs.

2.4. Opposition to the development of homeopathy

The concepts and observations expounded in the *Organon* are one of the first attempts in the history of medicine to codify the principles and laws governing human health and disease in an organic manner on the basis of reasoning and experimentation. This indisputable fact has been overlooked in most treatises on the history of medicine. Homeopathy brought ideas which were apparently too advanced for the primitive state in which medicine found itself at the time and which over the years have never been understood by more than a minority of those working in the field of conventional medicine, incapable as most of them are of embracing ideas and insights far ahead of contemporary thought.

Homeopathic medicine has undergone substantial ups and downs in its historical development: the rapid early boom throughout the world in the last century was followed by a head-on clash with orthodox medicine, which stopped homeopathy in its tracks and then led to its progressive decline, particularly in Western countries, where in some cases it all but disappeared altogether. Over the past few decades, however, we have been witnessing a steady recovery of homeopathic practice, even in very advanced countries such as France, Germany, and Italy.

Hahnemann himself, right from the outset, found himself faced with stern opposition from colleagues and even more so from the apothecaries, who felt that he was undermining the foundations of their profession: since he was recommending the use of small doses and was against multiple prescriptions, this new medicine was perceived as a serious threat to their profits. Moreover, he was accused of dispensing his own medicines and administering them to his patients, which was illegal at the time. He was thus arrested in Leipzig in 1820, convicted, and forced to leave the city. He then obtained special permission from Grand Duke Ferdinand to practice homeopathy in the town of Köthen, where he continued to work, write, and instruct his followers who were swiftly increasing in numbers and spreading their wings further afield. At his death (1843), homeopathy was known in all European countries (except Norway and Sweden), as well as in the United States, Mexico, Cuba, and Russia, and not long after his death it was soon to reach India and South America. It was first introduced into Italy in 1822 thanks to G. Necker who founded the Neapolitan School.

The rapid initial spread of homeopathy was probably due, on the one hand, to the fact that the orthodox medicine of his day and age was still extremely backward and lacked truly effective therapeutic remedies, and, on the other, to the distinct superiority of homeopathy in treating the various epidemics of typhoid fever, cholera, and yellow fever which raged across Europe and America in the 1800s.

For instance, in the 1854 London cholera epidemic the mortality rate was 53.2 percent for patients treated in conventional hospitals as against only 16.4 percent in those treated in the homeopathic hospital. During the yellow fever epidemic which spread throughout the southern states of America in 1878 the statistics show that the mortality rate in patients receiving homeopathic treatment was one-third of that in patients on conventional treatment [Gibson and Gibson, 1987; Ullman, 1991a].

In the nineteenth century homeopathy was immensely popular in the United States where major figures such as Hering, Kent, and Farrington were practicing. Homeopathy was taught at Boston University and at the Universities of Michigan, Minnesota, and Iowa. By the turn of the century as many as 29 homeopathic journals were being published. 1844 marked the founding of the American Institute of Homeopathy, which thus became the first American national medical society. Despite this, strong organized opposition was soon forthcoming from “orthodox” medicine, which viewed the growth of homeopathy as a major threat: homeopathy was calling into question the very philosophical basis, clinical methodology and official pharmacology of orthodox medicine. Right from the very beginning the new approach embodied a strong critical attitude towards the use of conventional medicines, which were judged to be harmful, toxic and counterproductive for the practice of homeopathy, in that they were all based on suppression of symptoms. What is more, good homeopathic practice called for a long apprenticeship and individualization of treatment, both of which demanded more time than physicians were normally prepared to give their patients.

1846 marked the foundation of the American Medical Association (AMA), one of the first objectives of which was to combat homeopathy: homeopaths could not be members of the AMA, and AMA members were not allowed even to consult a homeopath, the penalty for this being expulsion from the Association; legal recognition was denied to graduates with diplomas from universities with full professors of homeopathy on their academic boards. In 1910, a classification of American medical schools was drawn up (the Flexner Report) on the basis of criteria which assigned high ratings to schools which placed the emphasis on a physicochemical and pathological approach to the human body and strongly penalized the homeopathic approach. The homeopathic colleges obviously obtained poor ratings, and as only the graduates of schools with high ratings had their qualifications recognized, this was a mortal blow to the teaching of homeopathy. Of 22 homeopathic colleges operating in 1900, only two were still teaching homeopathy in 1923. By 1950 there was not a single school in the United States teaching homeopathy and it was estimated that there were only about a hundred practicing homeopaths, almost all over 50 years of age, throughout the US. For similar reasons, there was also a parallel decline in homeopathic practice in Europe in the early decades of the twentieth century.

We should not conclude, however, that the decline of homeopathy was due only to political and economic reasons. At least two other factors played a decisive role, namely the internal struggles within homeopathy itself and the new major scientific and pharmacological discoveries. As regards the splits in the homeopathic world, there were disputes between the various schools over dilutions (high or low potencies), over single or multiple prescriptions, and over whether prescribing should be based on total symptoms or on the main disease present. The various different schools developed their own organizations, hospitals and journals, thus making it very hard even for doctors seriously interested in learning about homeopathy to get their bearings in this field.

A severe blow to homeopathic theory was delivered by the chemical sciences and in particular by Avogadro's law, published initially as a hypothesis in 1811 and then tested experimentally by Millikan in 1909 [studies cited by Majerus, 1991]: as is well known, this law establishes that one mole of any substance contains 6.02254×10^{23} molecular or atomic units. As a result, a simple calculation demonstrated that dilutions of any substance beyond 10^{24} (24x or 12c in homeopathic terms) presented an increasingly remote chance of containing even only a single molecule or atom of the original compound. From this it was obviously but a short step to ridiculing the use of homeopathic medicines, and homeopaths were branded by their adversaries as being on a par with some kind of esoteric sect. Such opinions have continued to be voiced virtually unaltered up to the present day and can still be encountered in certain authoritative texts [Meyers *et al.*, 1981].

The decisive factor, however, permitting conventional scientific medicine to prevail over homeopathy was its own development as a science capable of identifying the causes of many diseases and as a source of effective techniques and technologies for curing them. Lister's discoveries in the antiseptic field and the development of anesthesiology greatly increased the success, indications, and popularity of surgery. While chemistry, physiology, and pathology were making giant strides in the theoretical sphere, the discovery of vitamin and hormone replacement therapies and, above all, the advent of antibiotics, analgesics, and antiinflammatory drugs enabled orthodox therapy to demonstrate its practical superiority. The possibility of interpreting pathological phenomena rationally on the basis of a scientifically validated model of the human body and the availability of chemical, physical or technological means capable of repairing defects detected with the utmost precision by increasingly sophisticated and reliable instruments was (and is) altogether too attractive and convincing a prospect to allow scope for exploring alternatives based on outdated and mysterious theories.

2.5. Variants of classic homeopathy

As we have already mentioned and as is only logical, further discoveries and applications have gradually added themselves to the initial concepts and groundrules. Among these, particularly worthy of note are "*isopathy*" and the introduction of the use of the so-called "*nosodes*."

2.5.1. History of isopathy

One of the earliest and most notable innovations of homeopathy, mentioned even in the later editions of the *Organon*, is isopathy. The term was probably coined by the veterinarian Wilhelm Lux somewhere around 1831-1833 [Lux, 1833]: after starting to treat his animals with the homeopathic method, he became convinced that every contagious disease bears within itself the means whereby it can be cured. He observed that the technique of dilution and dynamization of a contagious product (bacterium, virus or infected secretions, and organic material) would put such a product in a position to exert a therapeutic action on the disease resulting from the contagion. The law of similars *Similia similibus curenur* thus becomes: *Aequalia aequalibus curenur*, or the law of sameness.

In actual fact, the principles underlying isopathy can be traced to roots dating back even further than those of homeopathy [Julian, 1983]. Attempting to treat a disease by administering the agent capable of causing it or transmitting it is one of the most general acquisitions of empirical medicine. Numerous primitive peoples defend themselves against the effects of snake venoms by repeatedly inoculating themselves with them or with materials extracted from the venom apparatus of snakes. In the Far East the Chinese practiced a form of preventive smallpox vaccination both by wearing the clothes worn by a smallpox victim in the full suppuration phase of the disease and by inhaling dried smallpox pustules after storing them for one year. Pliny claimed that the saliva of a rabid dog can afford protection against rabies. Dioskurides of Anazarbo recommended that hydrophobia sufferers eat the liver of the dog that bit them. Aetius of Antioch recommended eating the meat of the viper that had just bitten you. In the seventeenth century the Irishman Robert Fludd cured the victims of consumption with dilutions of their own sputum after suitable preparation.

It was only at the beginning of the nineteenth century, however, with the birth of homeopathy, that isopathy was fully developed [for a review see Julian, 1983]. Three authors dominate the history of isopathy, and all three were homeopaths: Constantine Hering, Wilhelm Lux, and Denys Collet.

Constantine Hering was born in Saxony in 1800 and became an assistant to the surgeon Robbi, who entrusted him with the task of writing a book for him confuting homeopathy once and for all, as had already been requested by the publisher Baumgartner. After taking a closer look at Hahnemann's works, Hering was not only intrigued, but ended up by defending Hahnemann and coming out in favor of the new method. Hering contributed a great deal to homeopathy, but above all it is to him that we owe the *Lachesis* experimentation and the preparation of homeopathic remedies from pathological excretions and secretions, which he terms *nosodes*. Originally this term denoted any remedy extracted from pathological excretions or secretions obtained from human subjects or animals. Animal poisons were included in this definition, so much so indeed that Hering was the first to "prove" *Lachesis* (venom of the bushmaster snake, the first nosode in history, later to become a homeopathic remedy to all intents and purposes) and the rabies "poison." Convinced that every disease contains within it its own remedy and prophylaxis, he extended his studies to the scabies "virus," extracting the alleged "virus" from blisters from a subject with well developed scabies.

Hering also maintained that products of the human body and the various parts of the body in the healthy state all have a preferential action on the corresponding diseased parts, and as early as 1834 he advised the use of diluted and dynamized homologous organs ("iso-organotherapy"). Finally, he assumed that the chemical elements exerted a particular action on those organs in which they were mainly contained. His studies and papers on minerals and salts preceded the work of Schüssler on biochemical salts.

The second great isopath was the veterinarian Joseph Wilhelm Lux, born in Silesia in 1776. Lux was appointed Professor of Veterinary Science at the University of Leipzig in 1806, and his work constituted a landmark in the history of veterinary medicine. From 1820 onwards he was familiar with Hahnemann's works and applied the new method in veterinary medicine, becoming a staunch advocate of veterinary homeopathy.

In 1831 Valentin Zibrik asked him for a homeopathic remedy for distemper and anthrax. As he knew of no homeopathic remedies for these epidemics at the time, his advice was to replace the homeopathic "similar" (i.e. the drug prescribed on the basis of the symptoms) with a 30c dilution of a drop of nasal mucus from an animal with distemper and a 30c dilution of a drop of blood of an animal with anthrax, and get all the animals suffering from distemper and anthrax, respectively, to take them.

He was thus the first to create the strain called *Anthracinum*. In 1833 Lux published the results obtained in a booklet entitled *Isopathik der Contagionen* [Lux, 1833], in which he claimed that all contagious diseases bear within their pathological phenomena and products their own means of cure. It thus proved possible to dilute and dynamize not only the "known" disease agents, but also any type of human or animal secretion or excretion. Moreover, Lux also extended the principle to substances which had become iatrogenic as a result

of abuse, so that a method which was originally used only in contagious diseases was also applied to noncontagious illnesses.

Hering and Lux's ideas were supported and defended by Hahnemann's ablest disciple, Dr. Ernst Staph, and spread to France and Germany. In 1836, Weber, medical adviser to the Court of Hessen, published a study on the isotherapy of anthrax using a 30c dilution of purulent fluid from a gangrenous spleen (specific localization in animals). Joly wrote to Hahnemann from Constantinople in 1835 claiming to have achieved numerous cures for bubonic plague in leper colonies, using 30c dilutions of serous fluid from plague bubos.

Some years later, J.F. Herrmann of Thalgau (Salzburg) took up Hering's ideas and in 1848 published "*The true isopathy or the use of healthy animal organs as remedies for similar diseases in man.*" His own ideas were later to be developed by C-E. Brown-Séquard, the father of modern opotherapy.

Nevertheless, after this early period of expansion, the new method ran into continuous and increasingly severe criticism, so much so that isopathy went into decline for several years, even within the homeopathic community. Only a very few solitary practitioners went on using isopathic remedies. It was Father Denys Collet, a doctor and Dominican friar born in 1824, who eventually brought isopathy back onto the scene. In 1865 he witnessed a homeopathic healing which convinced him to devote himself to the new method. He rediscovered isopathy alone and after several decades of practice published a book entitled *Isopathie, Méthode Pasteur par Voie Interne* at the age of 74. According to Collet, there are three ways of healing, namely allopathy, homeopathy, and isopathy, all of which are useful depending on the clinical indications. In addition, he distinguishes between three types of isopathy:

- a) "Pure isopathy," which uses secretion products from the patient to cure the same disease.
- b) "Organic isopathy," which cures the diseased organs with dynamized derivatives from healthy organs.
- c) "Serotherapeutic isopathy" or "serotherapy" (dilutions of hyperimmune serum). The book also contains 42 personal observations and the rules of isopathic pharmacopraxis, which is the starting point for a substantial renewal of the method.

In the twentieth century two works devoted entirely to nosodes have been published: the first in 1910 by H.C. Allen, entitled *The Materia Medica of the Nosodes* [Allen, 1910]. The second is by the Frenchman O.A. Julian, who first published *Materia Medica der Nosoden* in German in 1960, later to come out in two French versions, one in 1962 entitled *Biothérapiques et Nosodes* and the other in 1977 entitled *Traité de Micro-Immunothérapie Dynamisée*.

The above-mentioned book by O.A. Julian in 1960 was a great success in Germany, where it revived the study of nosodes. In particular, R. Voll accorded therapy with nosodes a central role in his diagnostic-therapeutic procedure called electroacupuncture-organometry (see Chapter 7, Section 3), and H.H. Reckeweg, the founder of homotoxicology, made extensive use of nosodes in his biotherapy (see Chapter 2, Section 6).

2.5.2. Terminology and definitions of isotherapy, nosodes, and biotherapeutic substances

As can be seen from the history of isopathy, there is a major degree of confusion over terminology. Hering was the first to talk about nosodes, by which he meant a homeopathic dilution extracted from pathological excretions or secretions derived from human subjects or from animals. On the other hand, it was probably Lux (see Chapter 2, Section 5.1.) who first coined the term "*isopathy*," referring to a therapeutic method based on the principle of sameness - *Aequalia aequalibus currentur* - whereby an infectious substance, diluted and dynamized according to homeopathic practice, is capable of healing the same contagious disease that it causes.

More recently, in France, in the December 29 1948 issue of the *Journal Officiel*, a decree was published called *Codification of homeopathic herbal preparations*, in which the term "*nosode*" was defined as follows: "Nosodes are homeopathic preparations obtained from microbial cultures, viruses, or pathological secretions or excretions. (...) Nosodes are never sold to the public in the natural state, but only from the 3c dilution or 6x dilution upwards." They need to pass sterility tests. The 1c dilution, and obviously all subsequent dilutions, when seeded on various bacteriological media, must not produce a culture.

The definition of the term "*isopathic*" is different and does not refer directly to the term "*isopathy*." Again according to the French decree of 1948, "the term isopathic refers to those nosodes whose strain comes from the sick person himself." They are dispensed in an extempore manner starting from substances coming from the patient (blood, urine, and pathological secretions), the first liquid dilution of which must be

sterilized, or they are supplied by the patient (vaccine, medicine, allergen, and other products). An isopathic substance can be distinguished from a nosode on the basis of its individual nature, being destined for use only in the person who supplied the strain, after which it is immediately destroyed.

Even more recently, in the Codex to the 1965 eighth edition of the French Pharmacopoeia, the terms “*nosode*” and “*isopathic substance*” are replaced by the terms “*biotherapeutic*” and “*isotherapeutic*” substance, respectively. Lastly, it was O.A. Julian in the late 1970s who proposed an update of terminology in line with modern medical vocabulary and suggested calling biotherapeutic and isotherapeutic substances “*Dynamized Micro-Immunotherapy*.¹” The idea he wanted to get across was that the preferential action of these medicines is regulation of the immune system at the level of production of antibodies and/or autoantibodies. However, even the term introduced by Julian has not met with universal acceptance, amongst other things because the very concept of *dynamization* is much debated and controversial, inasmuch as no physicochemical basis for it has been defined.

In conclusion, what is meant by *isopathy* today is the use as remedies of dilute, dynamized preparations of the etiological agents responsible for the diseases themselves, based not on the principle of similarity of symptoms, but on the remedy being identical to the etiological agent. For example, the use of pollens in allergic asthma, the use of the same poisons to cure poisoning, and the use of “homeopathized” preparations of allopathic drugs to combat the toxic side effects of the drugs themselves.

What is meant by *isopathic* is the therapeutic use of pathological material, secretions, and excretions coming from the patient himself. For example, for the patient supplying it, matter taken from a boil constitutes an isopathic remedy (obviously after suitable preparation) for his or her chronic furunculosis.

What is meant by *nosodes* are those homeopathic preparations which consist of extracts of pathological materials (scabies blisters, urethral pus, initial syphiloma material), pathogen cultures (microbes, viruses), human or animal metabolic products (bile juices), or pathologically abnormal organs or tissues (tonsillitis, ulcers, osteomyelitis, etc.), suitably dispensed in sterile, dilute, and dynamized form according to homeopathic methodologies. By way of examples, *Tuberculinum* is a nosode prepared from the lesion induced by the Koch mycobacterium, *Variolinum* the nosode prepared from matter obtained from a smallpox pustule, and *Carcinosinum* the nosode from a carcinoma, and so on.

A particular form of isopathy is autohemotherapy, in which the patient's own blood is used, usually administered intramuscularly after suitable treatment (e.g. dilution-dynamization, ozonization, addition of homeopathic drug). This aspect will be dealt with in greater detail in Chapter 6, Section 4.

2.6. Homotoxicology

As a result of the development of the chemical, biochemical, and immunological sciences, which around the middle of this century began to provide a glimpse of a truly scientific interpretation of biological and pathological phenomena, various authors started to undertake a reappraisal of homeopathy within the framework of modern strictly scientific criteria. The law of similars, the active ingredients of homeopathic drugs, and the mechanisms of the effect of low and very low doses were subjected to critical review. This attempt was (from the 1950s on) and still is being made mainly by the German school of homotoxicology [Reckeweg, 1981; Bianchi, 1987; Maiwald, 1988; Bianchi, 1990] whose starting point was a reconsideration of the inflammatory process, seen essentially not as a pathological process, but as an organic defense reaction. The concept of vital force was restored to the sphere of biochemical, physiological, and immunological discovery.

Homotoxicology thus represents that branch of homeopathy which has attempted and is still attempting to link homeopathy scientifically to the chemical and therapeutic inroads made in the field of modern medical knowledge. We should note, however, that this attempt is still incomplete both on account of the limited effort and resources so far devoted to the purpose and owing to the vastness of the subject which potentially embraces all sectors of biomedical science.

The word homotoxicology derives from the concept of *homotoxins*, which basically mean any molecule, whether endogenous or exogenous, capable of causing biological damage. The concept probably came from the theories and experiences of classic homeopathy, which talked about endogenous toxins present in pathological “diatheses.”

Though somewhat generic, this definition is of indicative value in medical theory and practice. Reckeweg, in fact, defines the homotoxicological conception of disease as follows: “All those processes that

we call diseases are an expression of biologically appropriate defense mechanisms against exogenous or endogenous homotoxins (excretion, reaction, and deposition phases) or of the attempt on the part of the body to compensate for the homotoxic damage sustained (impregnation, degeneration, and neoplastic phases) so as to stay alive as long as possible" [Reckeweg, 1981, p. II (Foreword)].

We have no intention here of analyzing the applicational aspects of homotoxicology, which, in many respects, are just as intensely debated and controversial as those of homeopathy in general, but prefer rather to confine our attention to the basic theoretical concepts. To illustrate the homotoxicological type of approach, we can take a starting point, for instance, which is apparently common to both conventional medicine and homeopathy, namely vaccination. On considering this immune system manipulation practice, what clearly emerges is the ability of the organism to react to a disturbance of the system (in this case, the foreign antigen), producing a specific integrated response aimed at safeguarding its own structural and functional integrity. This response is excessive in relation to the initial stimulus and is relatively stable (memory), so much so, indeed, that it can be used to neutralize a hypothetical second disturbance (in this case, an infection). Furthermore, it is well known that the immune response is specific to the antigen triggering it, but may also direct itself against any target that is in some way "similar" (even only a part of the molecule). In the complex network of the immune system, the antibody spectrum may be broadened for the purposes of attacking and neutralizing not only identical antigens, but also those which merely resemble the original.

These concepts, which are the subject matter of modern immunology, serve to illustrate one type of behavior of living creatures which homotoxicology exploits and studies. The real contribution of homotoxicology is the extension of this concept from the field of vaccination and immunity to the body as a whole, with all its systems responsible for preserving physiological integrity. As far as homotoxicology is concerned, the factors impairing this integrity are not merely foreign antigens, but also toxic chemicals, radiation, endogenous molecules deriving from inflammatory processes (especially if these are impeded pharmacologically in their normal evolution), excessive or unbalanced nutrition, variations in the pH of connective tissues, stress, particular psychological states, and many other factors. We define as *homotoxins* all endogenous or exogenous molecules which mediate damage to cells, tissues, and organs. The body's highly integrated response to the pathogenetic noxa involves everything which is called the "*major defense system*" and which comprises:

- a) The immune system.
- b) The connective tissue where the various toxic substances are "burnt" by the inflammatory reaction, or are accumulated pending their elimination.
- c) The hypothalamo-pituitary-adrenal mechanism.
- d) The sympathetic and parasympathetic neural reflex system.
- e) The detoxifying function of the liver, such as microsomal systems and glucuronic acid conjugation.

This formulation of the *major defense system* concept dates back to the mid-60s; today, other important elements could be added (we need only mention the soluble polymolecular systems of plasma, the neuropeptides, the multiform functions of prostaglandins, the new functions of the endocrine glands and the gastrointestinal system) without this changing its essential pathophysiological significance.

In normal circumstances the activity of the defense system is characterized by normal physiological function, whereas in the case of an excess of toxic factors (or their permanence in the system) an activity level sufficient to produce symptoms is encountered in the various systems. If the defense system fails to eliminate the pathogenetic noxa, or itself introduces other pathogenetic elements, the picture changes and becomes complicated. According to the homotoxicological view, on analyzing the processes detectable in disease, we can distinguish between 6 basic phases, which are, in a certain sense, progressive:

- a) The *excretion* phase, in which the body activates all the processes of excretion via the skin, bowels, kidneys, nose, lungs, etc.
- b) The *inflammation* phase, with the formation of exudate, pus, fever, activation of the immune system.
- c) The *deposition* phase, with processes such as steatosis, glycogenesis, atherosclerosis, calculosis, in which the body tends to confine the toxic or excess substances to particular regions.
- d) The *impregnation* phase, in which the toxic substances (including any endogenous toxins produced in the previous phases) spread in tissues and organs owing to initial blockade of cell and enzyme disposal systems.
- e) The *degeneration* phase, in which cellular damage of cytotoxic, anoxic, dystrophic origin, prevails.

f) The *neoplastic* phase, in which genetically damaging factors, in conjunction with the presence of growth or hormonal factors, and possibly with depression of the immune system, lead to the occurrence of tumors.

One positive aspect of this model is that it provides a picture and an understanding of the evolution of the disease and, above all, it serves as a guide to the physician when it comes to making a rational choice of therapeutic action. In fact, once the possible causes of the disease have been removed, it is up to the physician to get the patient's body to work "backwards" through the various phases, using biological drugs and not enzyme inhibitors. From this standpoint, the inappropriate use of drugs which inhibit, for instance, the excretion phases (perspiration, exudates, peeling of the skin, catarrh, diarrhea, etc.) or the reaction phases (fever, acute inflammation) may even cause progression of the disease towards degenerative or neoplastic phases because the unremoved pathogenetic factors ("homotoxins") direct themselves towards other cell targets.

In its pharmacological repertory homotoxicology recuperates much of the homeopathic empirical tradition, preferring the use of low-dilution homeopathic drugs (i.e. drugs containing substantial amounts of active ingredient), though not openly opposing the classic approach, i.e. the quest for the *simillimum* and the use of high dilutions. The basic thinking, however, is the same: the aim is to stimulate the intrinsic healing and detoxifying power of the body by means of biological drugs at low doses. According to this approach, there will inevitably be areas of convergence with conventional medicine and modern pharmacology: new therapeutic agents are conceived which were not identified by homeopathic methodology, such as, for instance, the use of quinones or intermediate products of the Krebs cycle as catalysts of cell energy regeneration processes, the use of various oligoelements and vitamins, the use of natural and synthetic immunostimulants, including interferons and cytokines recently produced by genetic engineering.

It is obvious that the homotoxicological theory was bound to meet with criticism from the advocates of classic homeopathy, who maintained that the basic principles of homeopathy (similarity and potentized microdoses) are almost entirely neglected. The debate hinges basically on the fact that the aim of the homotoxicological approach is detoxification and elimination of "homotoxins," which in itself is valid, but the risk is that perhaps not *all* the levels of potential dysregulation of the body will be considered, including the predispositions and particular "terrain" of each individual.

Despite the fact that such issues are still very much a matter of debate, homotoxicology, which acts as a bridge between homeopathy and conventional medicine, does not wish to clash head on with either of them. Above all, there is a possibility that the experimental criterion whereby theories are subjected to vetting in the form of clinical and laboratory tests may constitute a firm point of reference for further progress and clarification as to the relationships between homeopathy and homotoxicology.

2.7. Homeopathy today

As we have already stated, the enormous progress of conventional medicine in this century has reinforced the opinion that allopathic treatment by means of "opposites" is the only effective form of treatment and, generally speaking, has also strengthened the view that it is only a question of time before a treatment is found for every disease. The great epidemics of infectious diseases have been defeated by a combination of improvements in living conditions, hygiene, vaccinations, and antibiotics. Our knowledge of disease due to vitamin, enzyme or hormone deficiencies has furnished new weapons in the struggle against diseases such as pernicious anaemia, dwarfism, and diabetes. If it were not for the problem of finding donors, transplants would already be routine therapy for a sizeable number of diseases. Cortisone and its derivatives are solving many problems of immune hypersensitivity. Recent developments in molecular biology give us good reason to believe that not even the genetic sphere will be able to escape our manipulative capability.

Against this backdrop, one cannot see any real scope for homeopathy, though at present its use is still spreading. This spread of homeopathy is happening in countries such as Italy, France, and Germany, and parallels the renewed interest in homeopathy in many other countries throughout the world [Gibson and Gibson, 1987; Ullman, 1991a; Ullman, 1991b]. In Great Britain, visits to homeopathic physicians are increasing at a rate of 39 percent per year, and in a survey of 28,000 members of a consumer organization as many as 80 percent reported using some form of complementary medicine at some time; in a *British Medical Journal* survey, 42 percent of the physicians interviewed referred patients to homeopaths [Wharton and Lewith, 1986].

A recent survey in the same Journal reported that in the Netherlands 47% of general practitioners use complementary therapeutic methods, most commonly homeopathy (40%), up to 37% of British general practitioners use homeopathy, and over a third of France's general practitioners use complementary therapeutic methods (5% exclusively, 21% often, and 73% occasionally) [Fisher and Ward, 1994].

Of 100 recently graduated British doctors, 80 percent expressed an interest in being trained in either homeopathy, acupuncture or hypnosis [Taylor Reilly, 1983; Ullman, 1991b]. It is well known that even the British Royal Family uses homeopathy as the main form of therapy. In France, some 11,000 physicians prescribe homeopathic remedies, and according to recent statistics 30 percent of French people have used such medicines [Bouchaier, 1990]. The French magazine *Le Nouvel Observateur* reports that President Mitterand and six medical school deans are pressing for a greater commitment to homeopathic research. In Germany, 20 percent of doctors use homeopathic medicines at least occasionally [Ullman, 1991b]. A study conducted in a Norwegian university hospital showed that 51.1 percent of patients with atopic dermatitis and 42.5 percent of patients with psoriasis had resorted to alternative therapies (mostly homeopathy and phytotherapy) [Jensen, 1990].

Homeopathy is even more popular in Asia, most notably in India, Pakistan, and Sri Lanka. Great support for the spread of homeopathy in India came from Mahatma Gandhi, and it goes without saying that in the countries of the Third World where the health system is as primitive as it was in Italy a century ago and there are no facilities or infrastructures for the application of western-style medicine, homeopathy finds plenty of scope for development, not least because of the low production costs of the medicines. This is also confirmed by the fact that Mother Teresa took steps to introduce homeopathic care in the reception centers for poor patients and sick children in Calcutta back in 1950 and today there are four homeopathic dispensaries run by the Missionary of Charity Sisters. The same is true of other countries: in Brazil there are approximately 2,000 physicians using homeopathic medicines and many medical schools hold courses in homeopathy. In Mexico, homeopathy is very popular, with five colleges of homeopathic medicine, two of which in Mexico City. In the United States, too, we are witnessing a revival of homeopathic practice: the sales of homeopathic medicines showed a ten-fold increase from the late 1970s to the early 1980s, and by the mid '80s there were as many as approximately 1000 physicians specializing in homeopathy [Ullman, 1991a]. Sales of homeopathic medicines in the USA have been growing at an annual rate of 20-25% during the 1990s.

In Italy, too, many young doctors are "specializing" in this sector which they regard as very promising from both the professional and occupational points of view. Schools of homeopathy are coming into being in many cities, issuing diplomas, and applying for official recognition. These considerations alone should be enough to justify a greater commitment on the part of the official scientific institutions towards monitoring and clinically verifying the efficacy of the therapeutic agents and measures adopted. A need is also felt for at least some teaching of the basics of homeopathy to the doctors trained in universities, since, at general practitioner level particularly, patients often tend to be keenly interested in homeopathy and to ask their GPs for information and advice on the subject.

There may be any number of reasons for the revival of homeopathy, despite the lack of university teaching in the field and of support on the part of public health authorities (homeopathic drugs are not available on the NHS), but it can hardly be accounted for merely on commercial grounds. The main reason for the success of the so-called "alternative" medicines lies in the fact that they offer something which today's physician is unable to provide. This "something" can be traced, on the one hand, to the greater degree of individualization of the treatment, attention being paid to the human and psychological elements, which are becoming increasingly neglected in this era of ultra-high-tech medicine; on the other hand, it is due to the awareness that many of the challenges still facing us today in the fight against disease call for a different approach from that adopted to date. In fact, the public at large and also the medical profession itself are becoming increasingly aware that modern medicine must come up with new means and new ideas for tackling problems such as the contamination of the environment by toxic agents, the ever-growing numbers of diseases induced by the increasingly potent drugs themselves, the degenerative diseases to which errors of diet or life-style contribute, allergies, autoimmunity and immune deficiency, large numbers of neurological and psychiatric diseases, psychosomatic disorders, and tumors. Despite the undoubtedly progress made over the past decades in these crucial fields of medicine, despite the fact that we so often hear of new "major breakthroughs" paving the way towards achieving a definitive cure for this or that disease, and despite the fact that our knowledge of the intimate mechanisms of the various diseases has increased enormously as a result of the techniques of molecular biology, it has to be admitted that, as far as general practice and the vast

majority of patients suffering from the above-mentioned diseases are concerned, the actual practical benefit of such knowledge is not exactly spectacular.

Anyone who denies that conventional medicine, in its large-scale application, currently finds itself in a kind of impasse is closing a blind eye to reality, which at every turn dramatically reveals this gap between scientific knowledge and practical results, or between outstanding diagnostic capability and poor curative means. Not only general practitioners, but also the specialists in many sectors are displaying a lack of confidence in the real ability of medicine to "heal" the sick [Muller, 1992]. Sophisticated systems are available for implementing investigations, therapies, treatments, monitoring operations, follow-ups, statistical analyses, but there are many more stumbling-blocks when it comes to healing patients. In view of the high standards of medical schools, this impasse cannot be ascribed to a lack of will-power, expertise, and commitment on the part of health care providers, just as it cannot be attributed to lack of means, if we consider the budgets which western societies devote to the public health sector. There is clearly something wrong with the system itself and this something is not of a quantitative type (amount of knowledge, amount of resources), but is qualitative, having to do with the basic approach.

These observations do not lead to the conclusion, as people often mistakenly claim, that the entire system has to be called into question; they merely serve to explain why an increasingly vast public is resorting to the use of the so-called alternative forms of medicine. One of the aims of this work is to show that there is no very substantial clash between scientific medicine and the empirical forms, the latter representing a kind of reservoir of experience, insights, guesswork, and traditions, which, once they have been thoroughly vetted and rid of their spurious elements, may spearhead a process of renewal, which, though by no means easy or painless, is of interest to both medical science and medical practice.

That this is not merely a commercial phenomenon is also suggested by the fact that we are witnessing a renewed interest on the part of scientists in experimental trials in this field. Studies are beginning to appear on the biological effects of homeopathic drugs, as well as studies on the so-called "*high-dilution effect*," or double-blind placebo-controlled clinical trials. The debate in scientific circles is becoming increasingly heated, and many researchers are setting themselves the objective of developing reliable methods for tackling the problem. For example, P. Turner, in an editorial in the journal *Human Toxicology* writes: "An explanation of the activity of homeopathic preparations might be found more readily if cellular or animal models could be developed for their investigation" [Turner, 1987, p. 267], and C.D. Berkowitz, in a commentary in the journal *Lancet* writes: "Despite these barriers to universal acceptance of homeopathy, physicians should maintain an open mind about potential benefits" [Berkowitz, 1994, p. 702]. Though the international allopathic literature still takes a very prudent stance, these are topical scientific problems which are addressed in international meetings not only of homeopathic specialists, but also of biochemists, physicists, and biologists (cf., for instance, the annual GIRI meetings, the 8th edition of which was in 1994).

Over the past few years there has been a growing demand for scientific explanation and rigorous clinical trials both from medical practitioners and from the health authorities. Unfortunately, we are faced with the considerable problem of the funding of the staff and institutions engaged in this activity. From the early 1960s research in the field of homeopathy has been boosted by the companies operating in the sector, who have started financing university institutes or setting up their own research laboratories [Majerus, 1991]. The main aims of the research are to test efficacy in double-blind controlled trials and to pinpoint the mechanism of action of the homeopathic drug at molecular, cellular and/or complex body systems level.