THE LAW OF SIMILARS:

ITS DOSAGE, ETC.

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THE LAW OF SIMILARS:

ITS DOSAGE, AND THE ACTION OF ATTENUATED MEDICINES.

BY

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PREFACE.

THE following pages contain in condensed form the sum and substance of several supplementary lectures delivered at the Boston University School of Medicine in the winter of 1882–3. Imperfect as all answers to questions concerning our law of cure, and the action of medicines, have been, and must be for the present, every new class of students, and of young practitioners, will inquire again and again, in anticipation of an answer which shall adapt itself to the individual requirements of each one's mind, and render lectures on Therapeutics and Clinical Instruction intelligible.

The greater the number of writers on the subject, so much larger will be the variety of answers in explanation of the same subject; and yet each attempt has guided, and will in future guide, a number of inquirers toward and into our method of practice. If only this measure of success will result from the perusal of the following pages, the author will be sincerely thankful.

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I.

THE MATERIA MEDICA AS APPLIED ACCORDING TO THE LAW OF SIMILARS.

As students, as well as physicians, we are all equally anxious to know something about the Materia Medica of the homœopathists, that peculiar class of practitioners, pursuing a path of their own, and for whose existence the history of medicine furnishes such ample ground and reasons, teaching, as I have endeavored to show in a previous lecture, that accurate knowledge of the means of cure had never been attained, and that, above all other things, fundamental principles were needed, in the place of theory and dogmatism, to guide physicians in the administration of their Materia Medica.

At the beginning of the present century medical history had to record a new era in Therapeutics. This branch, or rather this culminating point of medicine, had never appeared before, having been kept down by other branches of science which, though indispensable to medicine, are not medicine themselves. *Botany* is not medicine; *anatomy* is not medicine; neither is *phys-*

iology, nay, nor *pathology*. One may be proficient in all these branches; he may be the most skilled diagnostician, and yet be quite ignorant of *medicine*.

This was the state of medicine in the beginning of the nineteenth century. An *historical necessity*, *i. e.*, absence of exact knowledge of the Materia Medica and Therapeutics, created a new school, which made the perfection of these branches the aim and object of its existence, under the leadership of Samuel Hahnemann.

Under the name of homœopathy, exact knowledge of the Materia Medica, and its application to disease, was henceforth to create a new era in medical history. With the beginning of the nineteenth century a fresh start was taken. The new school did not take anything from the old, but it added something to it; it extended and enlarged it by taking up the thread where it had been dropped. The first volume of history had been closed; the new one opened, and its first chapter written: "The physician's highest and *only* calling is to restore health to the sick, which is called healing." And "the highest aim of healing is the speedy, gentle and permanent restitution of health. . . ." Thus opens Hahnemann's *Organon of the Art of Healing*. The best way to give you a thorough idea of what homœopathists mean by Materia Medica and Therapeutics would be to read that book to you and to explain it as we go along. Time and space forbid this at present. In this course of lectures I might

teach you homœopathy by leading you over the long, thorny path it still pursues in its development, by enlisting you in the struggles it engaged in to overcome obstacles; but in this attempt I will endeavor to bring before your minds its most characteristic features, its empirically established truths upon which the reasons for its existence are founded.

What is Materia Medica? Does it comprise every means ever employed in healing the sick? In a general sense it does; the food we eat may be used in such a way as to cure disease; water is one of the most indispensable auxiliaries in the treatment of diseases; though apparently only an element assisting in the nutrition of the body, it may be employed as a carrier of heat or cold, and admits of a countless variety in the modes of its application. Hydro-therapeutics is a branch of hygiene and dietetics. The air we breathe is often turned to account as a curer of disease, whether bearing the fragrance of the pine forest or the vapors of the ocean. The earth and the sand under our feet serves to relieve suffering.

There is scarcely a principle of physical science that has not been, or may not be, brought to bear as a healing agent; and countless are the mechanical contrivances invented to relieve suffering, or to aid the human body to regain its normal shape when modified by disease. Surgery reigns supreme in this direction. All this is embraced in medicine, why not also in the

Materia Medica? Here is the dividing line. All this broad ground we occupy in common with all other physicians; we have no dispute concerning it; each concedes to the other perfect freedom in the cultivation of this vast field, so vast and fertile that it is a wonder other agencies were continually sought to counteract disease in the human body; *these agencies are medicines.*

From time out of mind the kingdoms of nature have been searched for agencies to assist in the cure of diseases. At first these were crude animal, vegetable, or mineral substances, to which chemistry finally added numerous artificial substances. All of these being used for the purpose of curing disease, were called *Materia Medica.*

In order to understand my meaning, I must beg you to forget for a while what the older Materia Medica teaches; for we do not recognize those classes of medicines; we do not see only astringents, tonics, sedatives, or emetics, purgatives, etc., in the Materia Medica. For when you think of a "tonic" you cannot apply it before you have constructed a theory of atony which you desire to cure; if you employ an "astringent," you have first to construct a theory that there is something to be constricted or drawn together. If you use a "sedative," you have first to construct a theory that there is some function or process that must be quieted down. When you give a purgative you do

not pause to remember that it has many other properties besides that of a purgative, which is only *one* of its crudest effects. When you give an emetic it never occurs to you, in fact it ought not to occur to you, that this has many other effects, of which emesis is the crudest, and perhaps the least important. Take, for instance, those of Ipecac, which, besides its effect on the stomach, possesses the most powerful influence over the intestinal tract, the air passages, and the circulation. But Ipecac is an "emetic," and an emetic it must remain, if we are to believe even the most recent teachings and classifications of the old school. You are not to use Ipecac for the sake of its many other peculiar qualities, but you are expected to construct a theory of "revulsion," or of something imaginary, to be emptied or disturbed by vomiting — a very crude and painful attempt at relieving one who applies to you for relief from pain and suffering, but not to increase his agony.

Forget, then, for a few moments, that there are such classes, in order that you may see without prejudice what the new school teaches under the name of homœopathy. The best way to learn about this is to follow the course in which it was found and developed. The story has been so often repeated that a few words will be enough. It was found, first, that a medicine will cure a disease similar to that which it produces upon the healthy. It was first observed with regard

to Peruvian Bark. This led to the conclusion that the proper way to find out the properties of a drug would be to try it upon a person in health before giving it to others in disease. It thus produced certain febrile symptoms which resembled those of certain forms of intermittent fever. This was a trifling circumstance, and if it had remained solitary, it would have had no results; but it struck a spark, and the spark grew into a flame; it led to further trials, which abundantly and fully proved to be a fact what had been merely a matter of conjecture. If you doubt the observation with regard to Cinchona and its original test, you must cease to doubt it when you come to try the experiment further with the same drug, or especially with others, such as Belladonna, Aconite, and Arsenic. It is argued that we cannot produce actual diseases by trying medicines upon the healthy; and yet it is done.[1] It was discovered that cases of poisoning by Arsenic in considerable doses, produce to all intents and purposes cholera; the intestines were filled with that fluid resembling "rice water;" and not only this, but the fluid contained an abundance of the microscopic vibrio found in genuine cholera. Homœopathists *have used Arsenic in certain forms of cholera for more than half a century* with great success.

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[1] Hoffmann and Buhl in Virchow's *Orchiv*, sec. xlvii.

Striking in this respect are the effects of Copper. It is familiar to you all that in large doses this medicine produces intense "nausea, incessant vomiting, violent pains in the stomach and bowels, purging sometimes profuse, severe headache, cramps in the lower extremities, especially *clonic spasms of the limbs*," [1] etc. These properties of Copper have made it one of the most valuable remedies that we possess in certain other forms of cholera, no less than Camphor, Ipecacuanha, and Veratrum, which were recommended by Hahnemann in 1831.[2] He had tested their properties upon the healthy, and predicted from this test their applicability in cholera, which he knew only from description; but the result has proved the correctness of his assertion many times.

Such, in brief, was the manner in which a general law was discovered governing the administration of medicines in disease. I do not claim that this brief sketch bears the character of a proof; it is merely the story of the discovery, or, if you please, the realization of what had been foreshadowed in the history of medicine, in the history of the Materia Medica and its application in disease. Neither do I ask you to believe it. Scientific principles are not a matter of belief.

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[1] *Wood's Therapeutics*, I, 412.

[2] *Kleinert. Geschichte* d. II., p. 369.

Each one must find the proof for himself, by repeating the experiment others have made before him.

Allow me to anticipate a little in this place. Like physicians in general, homœopathists — not homœopathy — have expected too much in the way of faith from their actual or would-be followers. While homœopathy teaches that personal experiments — self-proving of drugs — is the foundation upon which its actual progress rests, too many are ready to rely on what others have found, or claim to have observed, concerning the action of drugs upon themselves. Such experience is valuable, indeed it is all we have; but let me remind you that the experience concerning drug-action, the pathogenetic or sick-making power of drugs, as recorded by our best authorities and provers, *becomes valuable and intelligible to him only who repeats upon himself similar tests*, first tentatively, then on a larger scale. None can thus re-prove the whole; but even a small part of the Materia Medica thus tested will shed true light on the greater part and render intelligible what else would appear little better than sounding words.

Having thus penetrated what would seem like a chaotic mass, your next step would be to discover what to do with it, how to apply it; for there is yet wanting the connecting link between medicine and disease. In order to discover the relation between medicine and disease, we should know two subjects.

First, the disease, and *then* the medicine. The latter we apply according to the formula *similia similibus curantur*. I simply state it here, and shall explain it at greater length further on. May it suffice for the present to say that *we apply a medicine according to the similitude of its effects to those of the disease*. How are we to discover these effects above conjecture, doubt, or theory? The traditional Materia Medica shows us but very little beyond certain theories, according to which medicines are classified. Among these theories are scattered grains of valuable empirical truths, which we grasp with avidity, in order to make proper use of them. But they are insufficient for the manifold, exceedingly variable conditions for which we are called upon to prescribe. We are, therefore, obliged to seek another method of information concerning the effects and qualities of medicines. The only method that suggests itself is *the trial of drugs upon the healthy living organism*. Were I narrating to you a history of Hahnemann, I am aware that I should bring his name in connection with every step as we proceed. As it is, I am endeavoring to place before you a train of thought divested of all personality, and confined only to the subject.

We seek not only the deadly, poisonous effects, which closely resemble each other in many drugs, but we desire to obtain knowledge of the *pathogenetic*, that is, the *sick-making* quality of drugs. *We therefore ad-*

minister them to persons in health in order that we may know how to use them in disease; for, as we shall see presently, the same *quality* of a drug which under *one* condition causes disease, may become the curative quality under *other* conditions.

We therefore administer medicines to healthy persons, in doses so gradually increased that the effect is gradually developed and the deadly effect avoided. This effect consists of phenomena which partly are observed by the person who took the drug, and partly by the physician who administered the same, and whose chief aim and object is to *get at the truth and nothing but the truth*; that is, what he can actually observe with sound senses; and to reject everything which he cannot see, and which is merely conjectural or theoretical.

He notices, for instance, that a person observes after taking a certain drug, that his head aches on the left side; that the slightest motion increases the pain; that he has nausea; that he vomits undigested food or mucus, etc. That at certain hours of the day all these sensations are much worse than at others; that, for instance, he experiences these symptoms at night, but is free from them in the morning. Theorists would either condemn this all as trivial and beneath notice, or perhaps would say this is a neuralgic affection, or call it a congestion, or attribute it to

irritation of certain — probably, however, very uncertain — nerves.

In practice we have no time to theorize or to explain these things. We must set theory aside, as Hahnemann taught, especially in his earlier editions, to make room alone for that *which we can know positively*. We therefore record those effects of a drug as a guide for the same as a medicine, in disease exhibiting similar symptoms spontaneously. Now, if there exists between medicine and disease that peculiar (specific) relationship by which the former is able to overcome the latter, producing a cure, this result is due to the method of selection according to the formula of similars. This does not express the mode of action, however, but refers exclusively to the mode of selecting a curative agent for a disease, as I shall explain later.

There is no other manner of discovering the properties of drugs than to test them upon the healthy human or animal organism. We cannot wait for *accident* to develop what we can find by *methodical* experiments. Most of what was ever discovered regarding the effects of drugs before Hahnemann's time, was the result of accident. Just glance at it and see how little it is, and yet how many centuries were required to collect this unimportant sum of knowledge.

A dozen earnest and careful observers can bring,

and have brought to light more useful facts regarding the Materia Medica in two years, than generations of learned men have done by unmethodical empiricism in thousands of years.

In order to prove this, let any one analyze the Materia Medica of the old school, separating theory from facts, and then see what these will amount to — they will scarcely equal in substance or quality that which has been brought to light by only three or four of Hahnemann's best provings. In order to illustrate this I would have to give you examples like those of Bichromate of Potash, Belladonna, Arsenicum, or other thoroughly proven drugs; but this would lead me too far. The trial upon the healthy is, and remains, our only means of obtaining knowledge regarding drugs, *which knowledge shall equal in comprehensiveness and exactness our laboriously obtained knowledge of natural diseases.* To extend this knowledge of drugs, and to *raise it* in value *equal* to that of diseases, *has been and is the aim of the new school of medicine.*

To test unknown drugs in disease we regard as an unwarrantable experiment. We therefore try them first on ourselves in health, after which we have a guide to their use in disease; which use now becomes legitimate, while before it was *illegitimate and hazardous* presumption. We speak of *similia similibus curantur* as a law, or rule, or maxim governing the use of medicines in disease. Those who are unfamiliar with

ts origin or its application, allude to it as the "theory of the homœopaths." We protest energetically. It is no theory. It is no theory that the stone if thrown into the air falls to the ground. Only the explanation of this phenomenon would necessitate a theory before being proved to be correct.

Although the following may not be a fair sample of a logical illustration, I adduce it here as a simple statement of the manner in which medical and empirical experience is gained:

A certain medicine given to a healthy person produces vomiting. That is a fact, empirically ascertained. You have heard, or partially conjectured, that this medicine, though it produces vomiting, has relieved that symptom; you resolve to ascertain the truth of the matter, and give the medicine to a person who is afflicted with vomiting, resembling that produced by the medicine. The person so afflicted recovers; you repeat the experiment as frequently as you have an opportunity, and repeatedly reaffirm the observation, and you are justified in considering another fact empirically established; established by perfectly *rational empiricism.*

Our rule, therefore, is an empirically ascertained fact, and not a theory.

Since another opportunity may not be offered for the present, I will now draw a brief *comparison between the manner of the old school and ours* of study-

ing the effects of drugs. Instead of being governed by classification of medicines according to *one* of their most prominent effects, let us observe the other properties of drugs, which point to their use in disease. Since I have mentioned Ipecac, let me revert to it again; it will serve as well as another as an example. The old Materia Medica sums up existing knowledge on Ipecac in a few words. It is an emetic, because it is known to cause vomiting. It is a tonic, because (in very minute doses) it improves the appetite. It is an expectorant, because in the course of its action the pulmonary mucus is secreted and expectorated. It is called a diaphoretic, because when combined with Opium it will produce a sweat.

The old Materia Medica mentions many other properties of Ipecac. That it irritates the skin, produces irritation of the eyes, asthmatic dyspnœa, followed by copious expectoration, and that it also causes purging. But this very important circumstance must not be spoken of too emphatically in the hearing of the old school, in order not to obscure those effects and duties principally assigned to Ipecac. The result is that Ipecac will not fit kindly into any class.

We of the new school of medicine do not ignore these effects; we also make use of them, but in another manner. We are not satisfied to know that Ipecac produces vomiting, but we ask, What *kind of vomiting* does it produce? and find that

it produces vomiting with headache immediately after eating; vomiting of large masses of mucus of yellow or greenish color, of offensive odor; all the food partaken of is rejected with admixture of bile. Often the vomiting is combined with diarrhœa, *alternating* with the vomiting. These active effects are accompanied by many modifying symptoms regarding the appetite, and sensations in the gastric region; for instance: bitter taste, loss of appetite, loathing of food, absence of thirst, sensation of emptiness of the stomach, violent pain in the stomach.

Now, according to our law of cure, a judicious use of this information concerning Ipecac, will render it one of the most useful medicines in the Materia Medica.

Every year we meet with numerous cases of sporadic cholera and cholera infantum, characterized by symptoms like those just mentioned. A minute dose of Ipecac will promptly relieve them, both where the vomiting is the most prominent symptom, and also where diarrhœa exists without vomiting. If the discharges are of various colors, greenish, yellowish, bilious, of bloody mucus, or watery, Ipecac should effect a cure.

Perhaps a case of asthma will illustrate its effects as strikingly. Its primary effect is to produce asthmatic dyspnœa, and sense of suffocation, at first with complete dryness of the air passages. This may last for

some time, and is the primary effect of Ipecac; but soon the secondary effect occurs under the reactionary power of the system, resulting in copious secretion of mucus, which is abundant in proportion to the severity of the dyspnœa preceding it. When these attacks occur in disease, when they occur particularly during the night, and in-doors, but when they are relieved by out-door air, Ipecac will often relieve them with magical effect, as you will, I hope, have occasion to observe.

Arsenic and Copper produce very similar attacks of asthma, and hence Ipecac is their most potent antidote, not only in regard to the lungs but the stomach also.

We lay the most stress on the primary effects of Ipecac on the lungs — the suffocation. While the old school endeavors to make use of the secondary effects, that of expectoration, which is nothing more than the primary effect of the medicine, overcome by the reaction of the organism, and is hence rather a manifestation of *the self-healing power of nature*, than of the pure effect of a medicine.

We do not find this to be the end of the action of Ipecac; it has many more healing powers besides those I have mentioned. It possesses the power of producing a marked degree of febrile excitation, resembling the quotidian and tertian forms of intermittents, characterized by a brief chill, followed by excessive

heat, with exacerbations toward evening, and with thirst only during the chill and rigors, which are often combined with oppression of the chest and nausea.

I have seen the effect repeatedly. For instance, in a case of intermittent fever which had resisted quinine for several weeks, was permanently and wholly cured by minute doses of Ipecac given in the period of apyrexia. The paroxysm did not return at the expected time, nor afterwards.

Furthermore, Ipecac is capable of exerting its influence upon the brain and its nerves in a marked manner, producing a certain form of sick headache, with nausea and vomiting, with intolerable pain in the brain and skull, extending to the root of the tongue. For such symptoms we have frequently to prescribe, and Ipecac will often be the curative remedy.

I think I have said enough to convince you that the action of a medicine like Ipecac is not limited to that of an "emetic or expectorant," and will add only that many other medicines have as great a range. I have endeavored to show you by these dry facts that it has been the error of the old school to try to crowd them into narrower classes, and that it is an error to prescribe them according to class-names, because they have *other* effects which cannot, and *must* not, be ignored. By showing you, by way of example, how great is the range of action of a medicine, I have also

shown you the only way by which each medicine may be distinguished from another.

I now come to the second part of our problem: Wherein consists the practical knowledge of the physician concerning disease? This is acquired in two ways: that of studying pathological phenomena with a view to their causation and essential nature. This is largely theoretical, and though not to be condemned as entirely futile, it cannot be utilized, as Old Medicine still attempts, at the bedside. For clinical purposes we possess another absolutely safe method, resting alone on the use of the *positively knowable*, and demanding the rejection of every theoretical and uncertain element. The symptom-complex as presented to our senses is, and should be, our only guide. This is homœopathy.

In summing up mentally the results of positive knowedge of medicine and disease, it must become obvious to you that the word "diagnosis" does not only apply to natural diseases, but also to those which can be artificially produced by drugs. In the phraseology of homœopathy, therefore, we speak of a drug-diagnosis, or diagnosis of the remedy, in contradistinction to diagnosis of disease. In making your diagnosis of the latter, you at the same time diagnosticate the remedy. This follows from our method of investigating both. Its eminently practical worth

over conjecture is very apparent. In fact, I am unable to conceive any reason for distinguishing one disease from another, unless it is for the purpose of curing the same, or to predict its probable or improbable cure — prognosis. We should be successful in our cures in proportion to our ability *in diagnosticating both remedy from remedy, and disease from disease.*

I do not mean to assert that we are infallible in practice — far from it; but the principle is correct, and only needs perfection. Neither do I mean to say that such perfection will be attainable within our life-time, nor even in yours, perhaps not in a century. It is the practical utility of the method of Hahnemann for which I plead. It has been stigmatized as puerile, as old woman's practice, and as what not. But I contend that it is not "thinking made easy" to join the diagnosis of the remedy to that of the disease. It is much more difficult than theorizing about both, with an hundred chances to one of arriving at a wrong result. The Materia Medica is inseparable from pathology in one sense. It is useless, even, to teach one without the other; disease being the positive element, Materia Medica its (negative) counterpart.

ACTION OF MEDICINES — THEORY.

What you desire to know is the *rationale* of this effect of medicines — an explanation of it. Then we

come to *theory* very plainly. There are a number of such explanations by different authors; first let me give you Hahnemann's own, as the first that was ever offered. He says:[1] "Since every disease is based upon some particular morbid disturbance of the vital force — then in case of a homœopathic cure, by administering a drug-potency, chosen exactly in accordance with the similitude of symptoms, a somewhat stronger, but similar and artificial, morbid affection will have been implanted upon the vital power, which is disturbed by the *natural* disease. The artificial disease is substituted, as it were, in the place of the weaker (similar) natural disease, against which the instinctive vital force now needs only to direct an increase of energy, and the artificial effect of the drug-potency will soon be overcome by the vital force, which, liberated at first from the natural disease, and finally from the substituted artificial disease, now again becomes capable of continuing the life of the organism in health." This is summed up more forcibly in a preceding paragraph in these words: "A weaker dynamic affection is permanently extinguished in the living organism by a stronger one, if the latter (deviating in kind) is very similar in its manifestation to the former."[2]

This is about all that Hahnemann, suggests about

[1] § 29 of the *Organon*.

[2] § 26 of the *Organon*.

his theory. If we were to stop to explain the *rationale* of every phenomenon of disease, as the old school ought to, but does not, and cannot do, we would make little progress in curing, as the history of medicine amply attests. We are in every sense justified in making use of practical empirical facts. Yet, while nothing of a theoretical kind need interfere with our treatment, our minds do not rest satisfied away from the bedside where theoretical reasoning will be done. In fact, other theories have been proposed to replace the unsatisfactory one of Hahnemann.

Thus von Grauvogl[1] rejects the assumption of "dynamic disturbance of vitality" and "healing power of medicines" as illusory and arbitrary. "The healing power," says he, "is present with life in general, and is no special part of it."

In homœopathy we can recognize only "*the law of equality of action and counter-action*;" by producing this counter-action, medicines are enabled to *restore* the altered or diseased power of resistance. Whatever explanation is given by different writers, the power of the living organism to react is always recognized, not only by avowed homœopathists, but often by others.

Thus *Dr. Pidoux*, in a lecture, expresses him-

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[1] *Textbook of Homœopathy*, pp. 87, 88, 123, etc.

self thus (as quoted by Grauvogl[1]): "It is not the medicament by itself, but the organism modified by the medicament, that effects the cure; and it is necessary that the prejudices of laymen, and errors of physicians, should be eradicated when they believe that a medicine is capable of acting directly on a disease, and even on a morbid product, neutralizing the same in the manner of an antidote," etc. The action of the medicine is best illustrated, says Pidoux, by the thermal waters, long after the use of which a curative reaction takes place, entirely opposite to the primary effect of these waters. This proves conclusively that medicine does not act therapeutically by virtue of its chemical properties, but that it develops in a vital manner a vital effect through the special powers of the organism. This is what Paracelsus taught three hundred years ago, but it was forgotten or ignored.

It is proper in this place to treat of the advanced theories of cure. I will, therefore, briefly detail to you the interpretations of other thoughtful practitioners, to show that while our practice is strong, its theories need more logical formulation.

Dr. Dudgeon[2] interprets the curative action of

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[1] *Text-book*, p. 183, etc.

[2] *Lectures on the Theory and Practice of Homœopathy*, p. 106, *et seq.* I would earnestly recommend the perusal of Dr. Dudgeon's lectures, where the reader will find full illustrations of the different heories of the curative action of medicines.

medicine thus: Disease, let us say for instance some form of inflammation, is "weakness" following over-excitement of the involved parts. Now, the similar medicine being administered, by its primary effect only stimulates the *weakened* reaction up to a *normal* action. Thus, Dr. Dudgeon objects to the superseding of a weaker disease by a stronger medicine; replacing the idea of Hahnemann by the idea of a process of stimulation instead of that of greater strength of the similar, thus approaching the matter in a manner more intelligible to the mind.

Hahnemann's explanation is untenable in the supposition that the natural disease should be weaker than the artificial disease, and weak in the supposition that this artificial disease is readily overcome by vital power. If this were so, we naturally ask: If the vital power is strong enough to overcome the superimposed artificial strength of the "stronger" medicine, why does it not overcome the natural disease without medicine? This question is the more justified by Hahnemann's ignoring the vital power, or supposing it to be helpless and inert, and ascribing all the power to the medicine.

In endeavoring to furnish some comprehensive idea of how medicines cure disease, I have, during my former course on Materia Medica, upheld the principle that medicines, when given as similars, act in a manner by which the enfeebled vitality is *reinforced*

in the direction in which it is striving to reëstablish the normal state, i.e., health. For, contrary to Hahnemann's assumption, it is evident that the organism, however enfeebled, actually never ceases to struggle, and only awaits artificial assistance. If we, by skill, succeed in supplying this deficiency in force, we may reëstablish recovery, health. In using the expression "vital force," I mean simply the *vis medicatrix naturæ*, that inherent property of every living organism, of plant and animal, which strives to return to its normal state, and which it generally reaches without artificial aid. I do not mean *dynamis*, *archæus*, or the like, existing by itself in the body independent of and detachable from material substratum, and hence instead of vital force, say organism.

It may seem as if we were in every respect at variance in this with the old school of medicine. This has always, especially since Galen's time, upheld the theory of antagonism, that is, of *contraria contrariis curantur*, on which account Hahnemann distinguished that school as allœopathy. This appellation, as you know, has for quite a number of years been repudiated by those to whom it was applied, thus permitting the just inference that the doctrine of contraries was also condemned. But of late, we find that it has very strong advocates, who bring it again to the front; among them, chiefly Dr. Roberts Bartholow, who has much to say in its vindication in his treatise

on the *Antagonism Between Medicines*, etc.[1] Now, as the exhaustive experiments, which Dr. Bartholow so ably describes, very pointedly show that *similar poisons*, that is medicines, antagonize each other, this interesting circumstance has to be brought in harmony with the doctrine of contraries, in order to guard against the danger of seeing the antagonism of medicine involved in the doctrine of similars which it supports even better than many experimental efforts made within our own school. Hence we find in Dr. Bartholow's treatise the following interesting passage. After briefly touching upon Hahnemann's "eccentric notions," which are described as visionary and tinctured with spiriticism of Mesmer, Dr. Bartholow continues: "Before that period in his senility when he developed his idea of spiritual essence in medicine, Hahnemann's doctrine of similars was merely an application of the Hippocratic maxim. The law of similars was associated with the law of contraries in the Hippocratic system, and Fernel, in the sixteenth century, in expounding and defending the latter, showed its relation to the former. A little consideration must, I think, tend to the conclusion that, when a remedy acts in a *similar manner* to a disease, there must be an antagonism between the force of the remedy and the momentum acquired by the disease. The disturb-

[1] New York: D. Appleton & Co. 1881.

ance in the functions, caused by the drug, must interfere with the disturbance caused by the morbid process. *If the actions were the same, the result of the combined impression would be an increase of the disturbance.* As they are similar only, and proceed from different sources, there are, then, two forces acting on the same tissue or organs, and necessarily opposed in action. Any truth in the homœopathic law or doctrine of similars is not therefore new, as Carus well said, for if there be similarity of action, it must of necessity be opposition."

It seems to me, that after this, there need be no serious schism between physicians, and no longer any need of opposed factions. The law or doctrine of similars is freely admitted; it is only claimed that it is not new. Well, nobody ever claimed that it was any younger than the world; and least of all did Hahnemann claim that it was. As for its interpretation, I have shown that Hahnemann assumed an antagonism between weak dynamic affection and the stronger similar affection, under the significant condition expressed in the words "*differing in kind.*" This has never been emphasized strongly enough. The *selection is made according to similar visible effects between medicine and disease. The curative action implies an antagonism.*

This is the point made by every interpreter of the law of similars; in fact, by every interpreter of the

rationale of a cure, by Dudgeon, as well as by Grauvogl, and very well stated by Bartholow.

The question how medicines act in curing disease is not only to be answered when asked by physicians. We are in duty bound to have a reasonable answer for laymen also; and you may rest assured that a science does not lose in value, or in popular estimation, if it can be understood by everybody.

First, we have to define medicines. What are medicines? In the first place, they are *drugs*, the names and descriptions of which are contained in our pharmacopœias and dispensatories. They form the groundwork of the *Materia Medica;* but, as just remarked, they are mere Materia before they are Materia Medica. So we ask again: What is this Materia, these *drugs?* How shall we define them? I answer: By *their qualities, properties, and their relation to the living organism;* this is what we call to mind when we speak of drugs, but not any other uses to which they may be put. What, then, is their relation to the living organism, and the human organism in particular? Why, *they are substances which, if introduced into the healthy human organism, cause this organism to become sick. That is the meaning of a drug.* This sickness may vary from a transient discomfort, to a painful or rapidly fatal disease; each drug does this in a *specific* manner *peculiar to itself*, hence the most injurious ones

are called *poisons;* for not every substance which causes illness or death by being taken into the body, is a poison.

That drugs *cause* sickness, is shown by the most common experience; you are all aware of that, and there can be no dispute about the matter. Neither will you deny that these substances which we call drugs, have since time out of mind *cured* diseases; or else, why do we read the history of medicine? Does it not all tend to exhibit the confidence men had in the use of drugs in disease, and that the object of medicine in the past ages has been to teach the proper use of drugs? There never existed the slightest doubt that drugs could cure disease, and have cured disease many times; the only question was: How to make them do it again? there was the difficulty.

How, now, are we going to harmonize the apparent paradox, that drugs, which possess the *unquestionable power of producing sickness in the healthy, do also cure disease when they are administered to the sick?*

In answer to the question, How can drugs or poisons which cause disease ever be used to cure disease? we set aside all theories, and hold fast only plain facts like these: Drugs or poisons cause disease by their *pathogenetic power*, as shown by the most common experience; but this same experience shows that they can and do cure disease. *Hence we can only infer that, as a rule, they cause recovery by means of the same*

power, or quality peculiar to each, by which they cause sickness — their pathogenetic power under certain conditions becomes their therapeutic power.

That which, under certain circumstances, acts as a deadly poison, may, if skillfully and reasonably employed, become an agreeable, mild, and beneficent medicine. Arsenic, for instance, may cause death by a painful and lingering disorganization of the digestive organs, with extreme prostration, and may, in proper dose and in proper repetition, save patients from such lingering forms of disease. The same may be said of Phosphorus, Veratrum, Belladonna, Aconite, and Opium — all known as extremely virulent substances, and yet many lives have been saved by them.

I say this may all be done under *certain conditions.* I have already alluded to the principal condition, namely, that of discovering the right remedy for a given case. We know of no better rule or law than that pronounced by Hahnemann: "Cure diseases with drugs producing a most similar affection upon the healthy."

You have seen that drugs will cure disease. This is the rule by which the drug related to a given case of disease may be discovered. It shows the relation of the drug to the animal body. That is all we dare to permit our actions to be governed by at the bedside; here theorizing is fatal, or arrant quackery. Drugs cause disease; they likewise cure disease.

While this stands undenied, our simple, safe maxim, rule, or law if you will, stands unrivaled, unchallenged.

There are unquestionably other rules referring to other means of restoring health. But let it be understood once for all, that the rule of similars applies *only to drugs*, and to nothing else, when a thorough, radical, and constitutional [1] remedy is needed. We do not deny, on the other hand, that drugs may be applied according to other rules; as Ether may be employed to produce insensibility to pain in surgery; an emetic or purgative may be employed to remove another poison from the system. While the rule of similars holds good, particularly with regard to Opium, this drug may be given to lessen the anguish of the dying when there is no hope of restoration. In short, a palliative as well as antiseptic use of drugs is perfectly admissible, as long as we do not lose sight of our highest aim and object: *to cure radically, permanently, and gently.* If the method of cure known under the name of homœopathy had no other merit than this humane maxim; if it had no other merit than to insure the *absolute safety of the patient* against the dangers of medicine; I would still embrace it unhesitatingly, in preference to any other system of internal medication known up to the present time.

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[1] *Grauvogl*, loc. cit.

II.

ON THE DOSE AND THE ACTION OF ATTENUATIONS.

THE condition next to the method of discovering the *right remedy* for a given case, is to find the *right dose*.

If I touch upon this time-honored question, do not fear that I shall wound your opinions which you have or may have preformed concerning it. It is not, as you may think, a question of belief; for it rests entirely on the fundamental idea of pure empiricism upon which Hahnemann founded our school; and it is this principle, not its undetermined issues, to which I adhere, and to which I call your attention.

When considering the curative power of drugs, we found that this depends on some specific quality. One drug affects particularly one organ in a peculiar manner; another drug bears a peculiar pathogenetic, and, consequently, also a therapeutic relation to another organ or region of the body, and so on. You have perceived that these peculiarities are due to certain *qualities* of the drug, which distinguish it from other

drugs. Now, experience teaches that qualities are not necessarily governed by *quantities;* in other words, the degree of thoroughness, or rather the efficacy of drug action, will often be found to stand in an inverse ratio to the quantity of the drug administered. Thus large doses of Arsenic are rejected from the stomach, and the patient may not suffer much; large doses of Calomel have merely a laxative effect; while much smaller doses of these drugs, repeated at intervals, will soon produce grave constitutional effects, thus exhibiting, by means of a great variety of phenomena, the peculiar pathogenetic quality of those drugs. Most of the active poisonous drugs either cause rejection from the stomach, or they kill quickly; *to obtain their general constitutional effects, they must be given in smaller* doses. This is a general rule with few exceptions, and is undisputed.

But the pathogenetic quality of the drug is not the only factor to be considered. The human body is not merely a mechanism or chemical re-agent; as we have seen before, it possesses a power of reaction peculiar only to living organisms. And this power of reaction is known to vary greatly in disease and health. It is assumed that much less of a drug is required to affect a diseased organism than a healthy one; for *sensitiveness* or *susceptibility is greater* in disease, while reaction, or the power to regain equilibrium, is greater in health.

I would state the case thus: *While susceptibility to drugs is not lessened in disease, the power of reaction is lessened, and may, by too powerful a drug effect, be destroyed.* In fact, the essence of disease, as acknowledged by all able critics, consists in reduced vitality; that is, reduced power to return from an abnormal to a normal state of health. This power is not naturally inert and helpless "instinctive," as Hahnemann expressed it, but at times and under circumstances unable to right itself unaided.

Guided by these experiences, it is desirable to arrive in future at some exact rule to regulate the dose to that point at which it will best aid vitality to restore the equilibrium of the diseased organism. As it is, we must, within certain limits, feel our way. My own course of reasoning is as follows: In a given case of sickness which we are called upon to cure, we begin by selecting a drug according to the rule of similars.

We next bear in mind that this drug so selected bears a certain specific relation to the disease; we hope by means of the medicine to arouse reaction in the organism just enough to reëstablish equilibrium, harmony, that is, health; for this purpose we should neither give *too much* nor *too little*. Now, we know by experience what would be a poisonous dose; we reject that. We further know by experience how much can be *tolerated* in health — we want much less than that, so we reduce it; we know, furthermore, by

experience, that the diseased body endures much less than the healthy, and so we give *only as much medicine as the diseased body will bear without feeling the least excess of action therefrom.* That is, just enough to *reënforce* vitality to the point of restoring the equilibrium. This will be felt as an amelioration by the patient; beyond that point disturbance would be created. At the right point it will act unperceived except by beneficent results. If, perchance, the medicine is the wrong one, but its dose not too strong, its evil result (aggravation) is transient and not irremediable by the ever active counteraction of the organism, even in disease. In the large traditional dose there is danger, often irremediable. If we are unable always to chose aright, it is only human; but one source of danger always can and must be avoided; it is to secure for our patient absolute safety against possible errors in human judgment. This desire, and principle growing out of it, I consider as the foundation of our school, its everlasting defense and bulwark.

Some hours might profitably be devoted to the explanation of our method of preparing medicines. I can only allude to certain points. Our method of preparing drugs for medicinal use is so simple, and so well known, that you are undoubtedly familiar with it. I will not dwell upon it at present except to guard against certain errors, misapprehensions and dissensions; first, by explaining the misapplied term, "*infin-*

itesimal," and secondly, by offering you some well established facts to prove the limit within which it is both safe and rational to regulate the dose.

First, as to the term "infinitesimal." It is true that the division and reduction of a medicinal substance may be carried to an exceedingly high degree without depriving it of its efficacy; but it is not, as I shall show you, removed to the infinite, for there is a limit which we must recognize. You have undoubtedly often heard that we use not only hundredths, but millionths and decillionths of grains or drops of medicine. This means chiefly that we have abandoned the traditional dose of the old school, which always operates on the principle that a patient must always have that dose administered which falls short of being poisonous or even fatal. Our own dosage has, on the other hand, fallen into the opposite error, which, however, is entirely on the side of the safety of the patient; the line has not been defined between nothing and too much; between these points the word "infinitesimal" has created confusion and discord.

Our medicines are called "infinitesimals," both in good faith and also reproachfully. The case stands thus: the method of preparing medicines by dilution rests on a certain form of arithmetical progression. Now, arithmetical progression, like numeration, proceeds at regular intervals, and may, like numeration,

be continued into all eternity. But it by no means follows that we should continue to do so. In fact, in preparing a medicine by dilution, running it up, as it is popularly called, you invariably stop at some *definite* figure, be it two, or be it a million. You may stop at any point. If you stop diluting at the third, that is not an infinitesimal or endless dilution; neither is it at the fifth, tenth, nor at the thousandth, if you will persist. For, if you have ceased to count, then you have arrived at a *limited arithmetical number.*

Even if you count or progress far beyond a figure at which medicinal substance ceases to be present, it is the *method* of counting by progression alone which is infinitesimal. It is from the method that the name is derived, while the result of your operation alone determines the value of your preparation. If you have counted, that is, diluted or attenuated beyond the possible point of presence of medicinal matter, by ignoring this point, why, then your preparation is valueless, inert. If you have ceased to count, or to dilute below that point which I shall presently indicate, then your dilution of a medicine may be useful in your hands. But in either case the name of "infinitesimal medicine" is a misnomer and nonsense, and serves only to keep up and encourage a spirit of mysticism, not only among patients, but physicians also. We often hear the question put thus: Do you

believe in infinitesimals? Do you believe that infinitesimals have any effect? This question becomes mixed and confused with the word potency and high potency. There is only one answer to it, and it is this: that medicine can only act when our dose actually contains medicine. If it contains none, it is useless. I have assumed for the sake of argument that the division of the dose by dilution might stop at any figure we might arbitrarily select, and that, therefore, our doses are not infinitesimal. True, within certain limits, we have no standard dose; but this assertion demands a definition of these certain limits which I have mentioned.

When we follow attentively the history of this, our new school in medicine, we find that the question of the size of the dose assumed such proportions as to crowd the more essential axioms of homœopathy into the background. Hahnemann himself gave[1] the impetus to discussions and grave dissensions when he stated in the *Organon* that the dose could never be too small to be able to overcome a disease. Added to this, was the theory of development of medicinal powers by means of attrition and succession, the limits of which he stated to practically be the thirtieth attenuation or potency, as the safe and reasonable point at which to stop; for, as he expressed it, it

[1] J. O. Kleinert, *History of Homœopathy*. Leipzig, Ernst Schäfer, 1863.

must stop somewhere; still, he admitted later that the effect was still perceptible at the sixtieth and upwards, but with the proviso that here the effect is too transient and feeble. He took care to fortify his position frequently throughout the *Organon*, by insisting that a medicine must always be strong enough to cause a perceptible sign of its efficacy, by what he termed a temporary aggravation. Its failure to be present would indicate the inefficacy of the dose. Although this is not an easy or practically applicable test, it proves Hahnemann's reluctance to acknowledge extreme views and their recognition as urged by the zealotism of his followers.

Still, it is not to be denied that he adopted the limit of medicinal efficacy only under certain conditions; namely, that there must be certain observable signs of aggravation, proving the medicine to be more potent than the disease. Nevertheless, there grew from this the belief that there not only was no limit to the divisibility and efficacy of medicinal matter, but that the only true salvation and progress were to be hoped for in excessive potentiation. This is a very brief statement of a cause of development of a phase in medical science — a phase of peculiar interest which will excuse this digression. This phase or period is distinguished by the peculiarity which in history, medical or otherwise, often characterizes the manner in which the human mind grasps a new principle.

At first it comprehends this principle, but soon loses sight of it, fastening on some less important, though perchance, mystical, unfathomable issue.

Thus the principle of cure embodied in the maxim *similia similibus curantur* sank for the time into the background, while the mystical conception of the infinitesimal dose seemed to form the main point at issue. The idea of potentiation offered peculiar attraction, not only to physicians, but it also interested and attracted laymen; with them it constituted the most essential feature of our school. The two lay-figures, Korsakoff and Jenichen, were the most prominent representatives of that faction. Korsakoff made known his method of high potentiation about 1831. While he has the credit of introducing homœopathy into Russia about that time, he did so by creating a strong current of belief in potencies as high as 1,500. In following this course he maintained that matter itself was not carried to so fine a state of dilution, but that the spirit was alone "potentized," while matter remained behind (*Kleinert*, p. 211). He asserted this with true laymanlike confidence, notwithstanding Hahnemann's firm conviction that if substances had any efficacy at this point, such efficacy must be due to the presence of matter in fine molecular subdivision. Although it is to a certain extent irrelevant who first initiated the notion of extreme

potentiation, and so-called high potencies, allow me one word more on the subject.

What are now called high potencies — that is, so-called dynamization far beyond the 60th of Hahnemann, say the 200th and upward — were not authorized by Hahnemann, but by certain laymen, who, singularly enough, carried some physicians with them. Hahnemann always yielded to these importunities reluctantly, and reluctantly and conditionally admitted the possibility of efficacious attenuations beyond the 60th. This admission, wrung from the weary master, was seized upon by enthusiasts, who endeavored to trace to Hahnemann the authorship of what Korsakoff and Jenichen, and later Hering, Fincke, Swan, and Skinner called high potencies.

The question and its agitation had almost died out in Europe, while it was fanned into life by Hering alone in America, when suddenly there was a revival here during the decade from 1850–60, about which time Dr. Dunham introduced certain high potencies recommended to him by Bönninghausen, in Münster. You may follow up the high-potency war in the journals at and since that period. From it you will see that it was less a problem of facts than of belief and strong assertions coupled with a spirit of intolerance, which always characterizes matters of pure faith unsupported by facts. The war of belief and unbelief was for a time of uncertain result; it crept into

societies, great and small, and caused much unnecessary strife and personal feeling. Not what, but who, is a homœopathist? That was the question. The excellent promises and captivating assertions of those of us who were votaries of Jenichen and Hering soon led many to perceive that those who claimed to be the only true followers of Hahnemann, based their claims too exclusively on their preference for "high potencies." By assuming an attitude less of persuasiveness than of prophecy, they intimidated and repelled many, and too readily admitted into their order every one exhibiting a similar proclivity. While they adopted and upheld those principles upon which our school rests, they undeniably placed "high potencies" in the foreground, and elevated their recognition as the test and standard of "true homœopathy."

When you observe the membership of our societies, and canvass homœopathic practitioners throughout the land, you will find that they count by thousands, and their patrons by tens of thousands; but you will also have to admit that this progress in conversions to our school is not due to the small number professing a superiority by virtue of their assumed title of pure or true homœopathists or followers of Hahnemann. They are evidently few in proportion to the whole, for the simple reason above stated, that they have formed a side issue on an assumed name. They have not followed Hahnemann, but

have differed from him. But one thing must be admitted; aside from the dose, they have insisted on and inspired many with a certain degree of fervor in favor of the main principles of our school.

Still, its progress was not enhanced, but visibly arrested, by the preponderance of the dose question, on which the following, I trust, will shed some light. You know that medicines used according to the homœopathic formula are not administered in the traditional, excessive doses of the older school. They are reduced to smaller proportions by a process as simple as it is ingenious. Dry, insoluble substances are ground with sugar of milk in proportion of 1 to 100, or 1 to 10, as the case may be, and soluble substances are dissolved and shaken in diluted alcohol in the same proportion, until they have reached the minuteness required by the prescriber.

Now, with regard to insoluble substances, a difficulty presented itself to Hahnemann. As each trituration required a whole hour, the process of carrying a trituration to the 30th would have been too arduous and expensive for practitioners. So he found, or thought he found, that such hard insoluble substances, like silica, gold, etc., by means of trituration would undergo changes "so as no longer to obey chemical laws,"[1] which changes render them entirely soluble

[1] *Organon*, § 181, *and Chronic Diseases*, 2d ed., vol. 1.

in water and alcohol at the third centesimal trituration; at, and after which point, they may be diluted and attenuated like any soluble substance. This statement held sway as an axiom nearly up to the present time. It had been challenged and tested without definite results before. I considered the tests then applied as insufficient and resolved to test it again. In the first place it was desirable to see whether hard, insoluble substances did progress in fineness under prolonged trituration. If Hahnemann's suppositions were true, the microscope would reveal *progressive fineness* of particles of substances like charcoal, gold, silica, etc. I determined to find out whether, as Hahnemann asserted, "the changes wrought by protracted trituration would prove to be so incredibly great as to border upon the wonderful" (*Chron. Dis.*, 2d ed., vol. 1), and to discover what Hahnemann meant by wonderful — a very indefinite, unsatisfactory expression.

I certainly expected the powers of the microscope to be taxed to the utmost, and feared that even skill greater than I could command might not suffice. But the difficulty was not so great. I began with triturations of leaf-gold from I to VI. Taking a fragment of the II decimal trituration of leaf-gold as large as a pin-head upon a glass slide, I added a drop of distilled water, and carefully warmed it over a spirit lamp until the sugar of milk was dissolved and a portion of the

water evaporated, after which a thin glass cover (0.10 to 0.12 mm.) was placed over the solution. This will exhibit larger jagged fragments of gold-leaf from 1.25 mm. down to numerous minute particles of 1-1800 to 1-2000 mm. Repeating this and similar procedures with the next successive triturations, I naturally expected to find the particles growing smaller and smaller, perhaps invisible. But in this I was mistaken. To be sure, the larger fragments were reduced more and more, and became less numerous in successive triturations, but mark this: the smallest ones observed in the first triturations were of precisely the same size in the succeeding triturations up to the VII trituration, beyond which they ceased to be present altogether.

Do not imagine that this was determined in an hour; the question at issue was too important for homœopathy to be settled at a glance. It required many weeks of training and practice, not only with the microscope in general, but upon this particular subject. It is not easy. One may be an expert microscopist, possessing the best of glasses, and able to solve the most difficult problems; yet, if he has never attempted this particular subject of triturations, I would attach little value to his opinion unless he gave proof of having practiced upon it carefully. Having attained to this degree of perfection, it is easy to demonstrate to others the truth of my assertions.

Next to gold I submitted charcoal, copper, lead, iron, quicksilver, and silica to microscopic examination, and found invariably that the smallest attainable particles do not exceed in minuteness 1-3000 part of a millimeter. I will add that the precise dimensions are not essential; various observers may differ more or less in their estimates. But they cannot differ in regard to the very evident fact that the smallest particles we are able to produce by trituration are visible under the microscope; that with dexterity and perseverance they may be seen with 1-2 to 1 inch objective; most certainly with a good magnifying power above that, say 1-4 to 1-5 inch.

Let me point out to you again that measurements are unessential, but the fact of visibility *is* essential. Now what have we before us? A particle of matter bordering upon the wonderful, it is true. Was this the degree of wonderful minuteness that Hahnemann meant? Who knows? Would Hahnemann have accepted this degree of minuteness as sufficient to admit of solubility? Would he have admitted that this would defy the accepted laws of chemistry? Unbiased thinkers would at once declare that such a question is entirely irrelevant, but rather whether Hahnemann's assertion is true. You will, with me, claim the right to investigate any subject anew with newer and better means than Hahnemann possessed. To denounce and discourage such observations as

heretical arises from a spirit inimical to all progress, especially when such charges are coupled with the insinuation that the principles of homœopathy had been attacked or belittled.

Any impartial mind must perceive at a glance that my observations only controverted some of Hahnemann's propositions concerning the dose, while the most important principles of homœopathy, far from being assailed, are essentially supported by giving a firmer basis to a hitherto ill-understood and distracting subject.

It is a matter of regret that within our school but few have examined the subject; but among these my assertions are strongly supported by several experts, such as Dr. J. Edwards Smith, Dr. W. A. Haupt, and Dr. E. Rushmore,[1] while only one, Dr. O. Buchanan, claims to have seen the subject in the light of Hahnemann's assertions.

Now, assuming that our observations are in the main correct, and that future observers will have to confirm them, what is the lesson we shall learn from them? It is, that with regard to triturations of insoluble substances we are enabled to determine an efficacious dose, because it is in our power to ascertain how far medicinal matter is carried in these triturations, as follows:

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[1] *Transactions of the American Institute of Homœopathy, of 1881-82.*

Given the minutest attainable particle of gold, for instance, to be 1-2000 of a millimeter, we can readily determine that a grain of solid gold reduced to its utmost limit by trituration, would yield the enormous sum of 46,080,000,000 of particles. These divided progressively by 100, as in ordinary trituration, would place the limit of the presence of such particles in the sixth centesimal trituration, provided the whole grain of gold could be evenly and exactly divided by grinding, which, however, is not the case, and is practically impossible. I have found that all the other substances examined by me yield a similar proportion; some being divisible into smaller particles, would furnish a correspondingly greater number. A grain of charcoal is reducible to about 392,000,000,000; a grain of mercury to 182,250,000,000 particles; but, as you will see from these figures, none would be available beyond the sixth centesimal.

In order to corroborate these statements, it is desirable to furnish you with another observation. It is this: All metals which are precipitated from a solution are reduced to extremely fine particles, considered by many as "incredibly" minute. They are all, without exception, easily visible under the microscope, and what is most remarkable, they correspond precisely with the minutest particles which all are able to obtain by trituration.

In order to establish this fact, Messrs. Otis Clapp

& Son have kindly furnished me with preparations for the purpose. They consist of white glass [1] ground for nine hours consecutively; a specimen having been reserved at the end of each hour. These specimens examined most patiently, undeniably prove that the smallest attainable particles are already present abundantly in the earlier samples, and are only more numerous in the last, their dimensions never falling below 1-3000 of a millimeter. And these again correspond in size with the smallest particles of any known precipitate of metals.

These facts have forced me to the conclusion that this is the limit of mechanical subdivision by grinding hard substances, like metals, in a mortar, together with a substance like sugar of milk. Although the degree of fineness reached is very great, it falls far short of "incredibly" small, or a point approaching the molecular minuteness of particles in solution, which Hahnemann probably meant.

It is proper to add in this place, that there are other methods of producing, both mechanically and chemically, smaller particles of hard or metallic substances; but as homœopathy has never dealt with any method except that of grinding in mortars, together with sugar of milk, this method alone is here

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[1] Glass was selected on account of its hardness and great insolubility, although it offers difficulties on account of its transparency.

to be considered. Beyond this, nothing less than chemical forces can reduce such particles. When so reduced, they are separated into their molecules. At this point the question of dose assumes another form, and requires another method of investigation, to which I will introduce you later on. For the present let me urge on you that these investigations were made in order to determine the interminable question of the dose, and the solubility of ordinary insolubles. Those who are given to spiritism may continue to believe that the spirit of the drug is carried up in potentiation, while the body remains behind. But for practical people, it is enough to know, it seems to me, that we should confine our dosage to the *demonstrable presence of matter*, that is, to the 6th centesimal or 12th decimal trituration.

We must have a standard limit of attenuated doses; we cannot go on erring and groping through limitless space, however this may fascinate the imagination. It leads to mysticism and superstition; it is eagerly grasped at by laymen. For them unintelligible phrases like "high potencies" have attractive force which inspires them with a kind of awe for the physician who uses them, but who would in their eyes appear like any other man, did he not emphasize that phrase. This mysticism which had seized upon homœopathy, gave it a kind of popularity here and there, but it cannot sustain it, for its real strength

lies elsewhere, namely, in the careful and consistent application of its essential principle.

I cannot conclude this portion of my subject without alluding to the limit of the dose pertaining to *soluble substances*. These are not subjects of microscopic study. When a soluble substance is contained in a solution, say common salt in water, its particles have become reduced to molecules, which again consist of a certain number of atoms. These molecules are too minute to be seen by any microscope. The minutest point which the best microscope in the hands of an expert can reveal is at present just about the 4724th part of a millimeter. This does not fall so very far short of a large molecule; for there are molecules composed of two atoms, others of nine hundred atoms, as for instance, a molecule of albumen; such a molecule would measure 1-7874th of a millimeter. Hence by only doubling the power of our highest objectives, which is probably impossible, a molecule would become visible.[1]

I will now give you a very brief account of the reasons why we should have a limit in our doses of soluble substances, and where that limit is:

If matter were infinitely divisible, as was held to

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[1] My Report to the International Homœopathic Congress, 1881. "A plea for a standard limit of attenuated doses."

be the case by most physicians of Hahnemann's time, we would now be in possession of more conclusive evidence of that condition than of the opposite. The molecular or finite condition of matter is not a new, but an ancient doctrine, familiar to Plato and Aristotle. But it was the work of Newton, La Place, and their followers, to give to the doctrine greater precision by their calculations of the wave lengths of light, based on the possible existence of molecules. Although these were conceived to possess calculable dimensions, the popular mind continued to regard them as transcendently or infinitely minute, and hence matter, though composed of molecules or atoms (then synonymous), was thought to be infinitely divisible.

On this basis homœopathists proceeded to divide matter, *i. e.*, to attenuate, dilute, or potentize it. From this point of view they were consistently in the right; and if the notion of infinite divisibility were unassailable, or strongly supported by other evidence than that furnished and advanced by clinical results, then every degree of attenuation, be it ever so high, would meet with no serious theoretical objections. But for the last twenty years the subject of divisibility has assumed another aspect. Molecules and their atoms have an existence which is no longer a matter of conjecture. "We may regard it as an established truth of science," says Sir W. Thomson, "that a gas consists of moving molecules." Their degree of motion

is determined by the density of matter. Their paths have been accurately measured (mean length of path), and its average determined. From this their dimensions are calculable, and may be approximately demonstrated. Matter consisting of molecules has not a homogeneous structure. When subdivided beyond the constitution of its structure, "*the entity of its molecules is destroyed, and they are resolved into atoms of their elements;*" and the limit where such decomposition takes place has been calculated for numerous substances, and the number of atoms of their molecules determined.

In order to demonstrate that molecules are calculable on the same principles as heavenly bodies before unseen, it should be stated here "that if we take 1-100,000 of a centimeter as the average length of path, the diameter of the gaseous molecule cannot be less than 1-500,000,000 of a centimeter, nor the number of molecules in a cubic centimeter of gas greater than 6×10^{21}, or six thousand million million millions" (Thomson).

As the difference between the densities of gases and liquids is also quite calculable, the number of molecules in a liquid of known density is also to be determined. In reference to this subject, Professor Maxwell says: "*The resistance of liquids* to compression *makes it probable that their molecules must be about* the same distance apart *as two molecules* are

when they encounter each other in a gas." Hence, "the volume of a substance when reduced to the liquid form is not much greater than the combined volume of its molecules."

Furthermore, according to the table which Maxwell has calculated from Lohschmidt's data, the size of molecules of hydrogen is such that *about two millions of them would occupy a millimeter*, and a million million million millions (10^{24}) would weigh between four and five grammes.

Although the calculations of molecular dimensions and motions do not embrace all their properties, we are in a position to accept their numerical relations, as well as those of the space they occupy, as the most important factors in our methods of subdivision by dilution, as expressed in arithmetical fractions. Thus the dimensions and weight of molecules, as quoted from Maxwell, furnish us with ready means of determining *the number of molecules in a drop of liquid* (tincture, watery extract, etc.) If we take the weight of one drop of water to be equal to one minim or 1.0533 grains, 4 1-2 (the average between four and five) grammes would be equal to 69 3-10 grains; or, taking even numbers, we will say that they contain 67 drops or minims. Dividing by this the number of molecules (10^{24}, or one quadrillion), we obtain a quotient of a little less than fifteen thousand million million millions (15×10^{21}, or fifteen thousand

trillions), a figure of twenty-three places beginning with 14,925, etc.

It may be objected that these figures are only approximately correct; indeed, no more than this is claimed by the authorities quoted, but they also show that six or ten ciphers more or less have but a trifling effect upon such large numbers; besides, all their calculations were conducted largely on the side of safety, by making everywhere due allowances for errors. And now, when we apply our simple method of division by 100 to the figure obtained above (fifteen thousand trillions, 15,000,000,000,000,000,000,000), it will be readily found *that with the eleventh division* (*eleventh centesimal dilution*) *the end of the sum is reached, and the number of molecules in a drop of liquid exhausted.*

But let us suppose that all the above figures fall far short of the actual number of molecules they express, and that instead of trillions we had quintillions, or sextillions, that is, an additional number of six to twelve ciphers to deal with, in this case three to six repetitions of the process of division by one hundred (dilution) would again bring us to the end of our sum, that is, the fourteenth or seventeenth centesimal dilution would limit us at the utmost.

The doctrine of high potentiation has always sought refuge in the presumption that, although the material substratum or substance may end, our clini-

cal results prove the spirit or peculiar force of the drug to be still further distributed. I am well aware that this dogma is antagonistic to the results of molecular science as above related, because it does not harmonize with the clinical records of those who have for many years employed dilutions above the eleventh. Inasmuch as such records collide with the molecular theory, the upholders of excessive dilution will have to deal with the teachings of that theory rather than to blame the temerity of one who seeks for a practical application of the same to medical science; it belongs to the *latter* to prove that the teaching of modern physicists is wrong if it does not coincide with the explanation of results hitherto relied on.

I now return to the application of the small dose. I say that we require a dose sufficiently small not to cause the least discomfort to a patient, and yet to cure him, and that the dose used by most of us may be such a fractional part of a drop or grain as to be inappreciable by our senses; and I owe you at least an attempt at an explanation why we use attenuated doses, and why and how doses attenuated by dilution act:

In refuting certain assertions of Baron Liebig, Dr. Grauvogl[1] quotes from Liebig's *Chemical Letters* (Vol. II, p. 273) the following passage, which I condense

[1] *Text-book*, II, 63.

somewhat: Many aquatic plants, whose roots do not reach the bottom, must obtain their nutriment, like the plants growing in the sea, from the surrounding medium. . . . . The analysis of duck-weed (Lemma trisulea) affords remarkable observations in this respect. The plant floats on the water, and its roots do not touch the bottom. A quantity of these plants was calcined and the ashes analyzed; also ten to fifteen litres of the water in which they grew were filtered, evaporated, and the residue likewise analyzed. This disclosed the most remarkable quantitative relation between the ingredients of the water and those of the plant. For instance:

	100 parts of the ashes of the plant contained	100 parts of residue of water contained
Chloride of potassium	1.45	None.
Potash	13.16	3.97
Oxide of iron and argillaceous earth . . .	7.35	(trace.) 0.721
Phosphoric acid	8.730	2.629
Silicic acid	12.35	3.24

Of five other substances the plant contained less in proportion than the water.

"The quantity of these mineral ingredients of the plants as well as of the water may well excite wonder in others as it did in the first observer," continues Liebig. This plant exceeds all the land plants in regard to its mineral ingredients; but the most remarkable fact is, that a selection occurred. The

plant contained all but one of the mineral substances of the water, but in very much altered proportion. The water contains 45 per cent of lime and magnesia, the plant only 21 per cent of both. The water contains 9.72 per cent of oxide of iron, while the plant contains ten times that amount. The most remarkable disproportion exists between the potash and silica of the plant and that in the water.

Organic bodies, therefore, do not act only according to the laws of chemistry, but have their own laws by which they acquire what they need, not only to support them in health, but also to appropriate that which they require to restore them to health when they are diseased.

Liebig's own discovery of the above proportions not only controverts his arguments against homœopathy, but actually supports the latter essentially. From Liebig's discovery, and from it, as Grauvogl aptly shows,[1] we have been enabled to recognize a law of nature which clearly illustrates the curative action of highly diluted medicines. This law, if we may call it one, is as follows: *Organisms possess the power of assimilating those elements which they require, in larger proportion than such elements are contained in the food, water, or soil upon or in which such organisms live. They also possess the power of excluding or of*

[1] *Text-book*, II, 65. German edition.

assimilating only small proportions of elements offered them in superabundance.

The example just quoted of the proportion of potash and silica in the duck-weed, as compared with that contained in the water, is by no means a solitary instance, nor is it the most wonderful. It is a well-known fact that Iodine is contained in sea-weeds, especially the Fuci; these are burned and their ashes contain a twenty-fourth part of Iodine.[1] This is apparently a small proportion — yet large enough to make Iodine a very abundant and common article in the market, where it may be obtained in unlimited quantity.

These plants from which Iodine is obtained, grow in the ocean, and obtain their nourishment exclusively from the ocean-water, especially when they grow from hard rocks. And yet the sea-water contains so minute a proportion of Iodine, that it only appears in some analyses as a trace, and in others not at all. Such, at least, was the case in six analyses. In four tests, by Marcet and Link, of the North-sea-water, only one gave a trace of Bromine, and none of Iodine. In two analyses of the water of the Mediterranean, there were mere traces of Iodine and Bromine.[2]

Though chemical tests may not have been able to

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[1] *U. S. Disp.*

[2] *Buchner, Arzneibereitung*, p 353.

determine the quantity of Iodine, and I may say Bromine, in sea-water, they prove that it is there, in a state of solution, or combined with sodium. An extremely minute quantity of Iodine, equal to about the third decimal, is dissolved in a huge mass of water, and yet those marine plants appropriate from this solution such measurable quantities of Iodine; thus illustrating Grauvogl's deduction from Liebig's observation. Let us remember this, and store it up for use.

The coral-polyp builds up large islands of lime-rock, which it appropriates — whence? We know of no other source than the ocean in which these beings (radiates) exist. And yet lime is contained in the sea-water in very minute proportions; next to Iodine and Bromine it is present in less proportion than other constituents; varying from several grains to a fraction of a grain in the pound of North sea-water and that of the Mediterranean. The latter contains only 0.001 part in a given quantity, and yet corals grow in the Mediterranean, where there is least of lime. We could enumerate such examples *ad infinitum*. They surround us everywhere; everywhere the law holds good; let me allude to but one more phenomenon, that of *nutrition of the animal body*. The elements entering into its composition are familiar to you; let me remind you only of the most conspicuous ones, such as iron, lime, and phosphorus. Perhaps you will readily account for these in the

human body, because you can detect them in appreciable quantities in certain kinds of food we eat. Undoubtedly we may account for their presence in the same manner when we compare the constituents of the food of, for instance, the graminivora with the constituents of their bodies.

Take, for example, the tame ox, or still better, the buffalo. All the food the latter ever obtains, next to the milk of the cow, is grass. According to Liebig, in the first place, grasses, though containing much lime,[1] do not grow best upon highly calcareous soil,[2] thereby illustrating this law of specification. But, though fertile soil contains Oxides of Iron in very appreciable quantity (varying from 2 to 5 per cent),[3] the grasses, especially, contain iron only in quite an inappreciable quantity; white clover or lucerne contains about one third or one half of 1 per cent. Oats contain about 1 per cent; oat-straw contains none. Now the ox or buffalo lives upon these grasses, and yet his blood contains about 9 per cent of iron.[4] The proportion of iron in the form of phosphate of peroxide in the milk of a cow is 7-100

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[1] *Agricultural Chemistry*, 1843, p. 97.

[2] "The Same and Other Analyses," in *Johnston's Agricultural Chemistry*.

[3] *Johnston's Agricultural Chemistry*, p. 283.

[4] *Carpenter's Physiology*, p. 188.

of 1 per cent. The blood of the calf contains probably as much iron as that of the parent.

Thus we might go on multiplying these examples, always renewing the proof of the existence of the law I have just referred to. Yet, as shown by the relation of grasses to the ferruginous soil, *it does not follow that, because the medium inhabited by an organism, or that, because its food contains a certain element or constituent in abundance, such element will be largely assimilated by the organism, however indispensable to its existence.*

The single observation of Liebig, when enlarged by further analogous ones, then also permits a more extended application of Grauvogl's deductions. Those phenomena of assimilation illustrate by analogy an important feature of our therapeutics, namely, the conditions favoring the action of medicines, not only in small doses, but their action when offered in a form of attenuation by dilution, or by reduction by mechanical subdivision to the finest degree possible, of which the following is a brief synopsis: We prepare medicines by what are termed fluid and dry dilutions. To an hundred drops of alcohol, for instance, we add a tincture of a medicine in proportion of ten drops or of one drop, as the decimal or centesimal scale may be preferred; ten drops of this solution or *attenuation* are again added to an hundred drops of alcohol, and so on, to the tenth or eleventh centesimal. Dry

attenuations are prepared on the same principle by triturating ten grains or one grain of an insoluble substance with an hundred grains of sugar of milk; ten grains of this first trituration are then triturated again with one hundred grains of sugar of milk, and so on, as many times as you choose.

As I have illustrated to you, triturations may contain medicine up to the sixth centesimal. Diluted attenuations of soluble substances will contain medicine up to the tenth, or possibly the eleventh centesimal, at which point they are limited by their molecular constitution, beyond which further subdivision is impossible, unless it is into atoms of their elements, which is irrelevant here.

Chemical analysis has failed to discover more than a trace of Iodine in sea-water containing acres of kelp charged abundantly with that metalloid. Chemical analysis has failed to exhibit the presence of more than traces of iron in many grasses, and yet the blood of graminivora contains a quantity which would be a large proportion. And now I may safely maintain that *our medicines are artificial imitations of quantities as represented by actual proportions of the constituents of our food.*

Furthermore, we are justified in drawing the conclusion that an *organism will assimilate the elements necessary for its support, only when these are contained in the food in a highly diluted form.* How much sea-water contains a grain of Iodine? How many pounds

of grass a grain of iron? Neither are the proportions of lime and phosphorus in food or soil so large as to make it readily intelligible why they enter so largely into the composition of organic bodies. It is a well-known axiom among practical agriculturists that the abundant supply of lime alone does not increase the growth of a crop — it must first become diluted. We know that small doses of much diluted or attenuated medicines are sufficient to cure any disease capable of being cured. I say an "attenuated" medicine, because a mere fraction, say 1.100 of a grain of phosphorus would have little or no effect, while that one hundredth, made to assume the space of one half cubic foot would have an effect; in short, such attenuations have, under certain conditions, a curative effect. I purposely place an empirical fact at the head of my proposition. The following is its explanatory solution:

As the healthy organism craves and has the power of assimilating from food the elements necessary for its nutrition and maintenance, in like manner the diseased organism possesses the power of assimilating those elements which are capable of restoring it to health, provided these elements are offered in an acceptable, that is, in an assimilable, form, namely, in a state of dilution, resembling the proportions in which the elements of food are offered by nature; that is, at any point of

dilution between the first and tenth or eleventh centesimal.

It is to be assumed that the diseased, like the healthy organism, assimilates nutritive elements; but in a diseased state, it seems to demand something besides food, namely, assimilable medicine.

Such is a part of the course of reasoning which a practitioner of homœopathy might follow to support him in his therapeutic measures. If such suggestions do not meet with your approval, leave them unheeded, or replace them by better conclusions, based on better known ground; but remember that it is far more satisfactory to try to find out the reason of things, even if you should fail to meet every point, than to plod thoughtlessly through practice. Time will not permit me to devote more than these few words to the subject of the analogy between nutrition and cure, but I would refer you to some very suggestive chapters on the subject in von Grauvogl's *Textbook*. I have one more observation to offer in connection with the laws of specification, as von Grauvogl called it, namely, that elements extensively present throughout *inorganic* nature, are most essential elements of nutrition of *organic* nature. I need only mention lime, iron, sulphur, silica, potassium, sodium, phosphorus, etc. In some form or combination, these elements pervade the entire earth and every living thing upon it.

And it is the most remarkable fact, that these and many others, though they enter largely into the composition of the animal organism, are at the time the most indispensable, useful, and powerful remedies in diseases of that organism.[1] Hence the designations of poison, medicine, and food are to be regarded only as relative designations, each relating to a different condition under which it may present itself to the animal organism.

These reflections lead us to the *third condition* in the administration of medicines in disease. Supposing we had determined the proper specific or homœopathic remedy, and that we also had solved the question of dose, it would yet require decision, how often that dose should be repeated. But since the *proportions* of the dose depend upon the susceptibility or sensibility of the organism, it is a subject fraught with perplexities like the other propositions. I doubt if any definite rule can be found to govern the repetition of doses in a given case. In this, as in dosage, we meet with extremes. Some will warn you against any repetition; others repeat very often, and so on to allopathy, where both dosage and repetition are carried to a dangerous excess. The middle course, advised by Hahnemann, is still the best; he advises that

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[1] Grauvogl's *Nutritions Mittel.*

the "periods (of repetition) are always to be determined by the more or less acute course of the disease," that is, all the way from five minutes to a fortnight.

The organism recovers from, and in disease repels, single or too gentle impulses, or it may be too seriously disturbed by a severe one. We can scarcely err on the side of safety, when we attenuate our doses within rational limits, and by feeling our way along we may increase the impulses by frequency of repetition, and in quantity, if need be. One rifle ball will not destroy an army, nor would you need an axe to kill a gnat; but reflect that the regular and gentle undulations of the pendulum unsettled the masonry of a cathedral tower. The last serves us as the better analogue in regard to the repetition of a curative impulse.

The main desideratum is to find a medicine between which and the disease there exists a specific relation, and to administer the medicine in a safe, that is, in an attenuated proportion, whereupon the beneficent effect will become apparent, the only effect or result we can possibly expect or desire. Every effect beyond this is unnecessary, and to be avoided if possible. Perhaps none whatever may be perceived; this, unlike a visibly evil effect, would neither be a source of discouragement, nor cause for disparagement of our method. *To do no harm* where we are dealing with numerous uncertainties, should be our

constant desire, and our chief rule. It is the rock on which our system rests, and whereby it is distinguished from the yet dominant older school.

I think that in these two lectures I have touched upon the principal features of homœo-therapeutics. It is too great a subject to be condensed in so small a compass. Therefore, if parts of it have not appeared clearly comprehensible, I trust you will attribute the defect, not to the incompleteness of the principles I have tried to elucidate, but rather to the limits of ability, time, and space at my disposal.