

The Basis of
Potentization
Research

Theodor Schwenk

This is the first edition by Mercury Press of
The Basis of Potentiation Research by Theodor Schwenk.
It was translated from the original German *Grundlagen der
Potenzforschung* by Marjorie Spock. Permission for this
publication was granted by the author and
Verlag Freies Geistesleben, Stuttgart.

Cover form by Rudolf Steiner, design by Peter Stebbing.

ISBN 0-936132-91-4

Copyright © 1988

MERCURY PRESS
Fellowship Community
241 Hungry Hollow Road
Spring Valley, NY 10977

Contents

Introduction: The Potentized Remedy	1
Foreword	11
Commentary on the Reprinting of this Book	13
I. Historical Aspects of Potentization Research	15
II. Instreaming and Outstreaming Forces	25
III. The Evolution of the World of Matter	34
IV. On the Properties of the Fluid Medium	42
V. Processes in the Medium as it Undergoes Rhythmical Shaking	56
VI. Experimental Findings	61
VII. The Potentized Substance	70
VIII. Experimental Findings Using Potentized Iron-Sulfate	74
IX. What the Potency Curves Reveal	85
Bibliography	91

Introduction: The Potentized Remedy

Most of the pharmaceutical preparations produced by Weleda, Inc. undergo the potentizing process as their final stage. This is preceded by one of the various methods of plant extraction, then by a more or less intensive heat treatment, and the preparation of minerals and metals. Unless these substances are left in tincture form or some other such initial stage, they are carried to a further stage by potentization, employing either a fluid or a granular medium.

Potentization, which is a stepwise treatment of the original substances, was introduced by the homeopathic school on the basis of a discovery made by Samuel Hahnemann (1755-1843) at the turn of the 19th Century. Though Hahnemann started out prescribing material medications, he later came in the course of his practice to ever higher potencies. The historical development of his discovery was thus itself just such a series of steps from a material beginning to the use of high potencies. However, the essential characteristic of the homeopathic method is not, as is often mistakenly supposed, the producing and prescribing of potentized substances, but rather its adherence to the principle of "like cures like" or—in medical terminology—the "Simile Principle." This discovery actually predated that of the effectiveness of potentized substances. In a life devoted to attentive study of the effectiveness of medications, Hahnemann had the distinction of adding to the Simile Principle the method of the potentizing process. Though he could not have been aware of it, this process must have been known very early in cultural history, a fact reported by Rudolf Steiner from his spiritual research but of which little other record exists.

In the sketch to follow, potentizing will be discussed chiefly in its aspect as a pharmaceutical process, though it does play a much larger role in nature than is commonly recognized. We

remind our readers of the great significance of the trace elements occurring in nature in the very finest dilution, of the existence of many medicinal springs with their traces of substances important to life, of the ocean tides with their rhythmical motion, their surf breaking along the coasts with its content of a variety of dissolved substances. These processes can all be regarded as nature's own worldwide potentization processes. Greater and lesser amounts of matter are thus as though "breathed" into hardly conceivable spaces in the course of long periods of time and as a result of manifold rhythmical processes, and this dissolving takes place according to laws such as govern the gaseous element.

Potentizing is done, as is known and has already been mentioned, in a series of steps. A quantity of a given substance is taken up by a quantity, several times larger, of a suitable medium: water, alcohol, milk sugar, and subjected to rhythmical movement. Superficially considered, this corresponds to a dilution; a decimal potency is a 1 plus 9 proportion, a centesimal potency 1 plus 99. Once a proportion has been chosen, it is retained through all the stages of the potentizing process (Weleda commonly uses decimal potencies in its products).

But the process involved here is more than a mere diluting. The important process, as Rudolf Steiner once put it, is "what is being made to happen": in the first place, a rhythmical *motion* at every stage of the process. In his day, Hahnemann ascribed greatest importance to the *process* involved in treating the substance:

"The inner remedial capacity comes marvelously alive when subjected to friction (shaking), and frees itself as it were from its bonds with matter so as to be able to work more freely and with greater penetration on the human organism."

To put it thus is to characterize potentization in its three fundamental aspects of substance, force and rhythmical motion.

It is the latter which leads over from the substantial state to the development of force.

It is immediately obvious that the threefold aspect of the potentization process is by its very nature attuned to the human organism; if we were unfamiliar with that process we could read it from the latter:

From the *metabolic system*,
with its still largely ponderable processes;

From the *nerve-sense system*,
with all its uniqueness reaching into the realm
of the imponderable;

From the *rhythmical system*,
which, in its activity, livingly interweaves
the two other members of the organism.

In a suggestion Rudolf Steiner made in 1920 to L. Kolisko for experiments with potentized substances he said,

"Put plants to germinate in various dilutions. A curve will result. Study this curve, for it will reflect the vitalizing process achieved by the remedy in animal organisms."

(The purpose here was to produce a remedy for treating animal diseases; the process could then undoubtedly be adapted for use in the human organism.)

It is clear from Rudolf Steiner's suggestion that the potentizing process, the growth curve and the bodily vitalizing process are all terms referring to the same thing.

Rudolf Steiner indicated further that low potencies act primarily on the human metabolism, those in the middle range on rhythmical processes, and high potencies on the nerve-sense system. L. Kolisko reported that the corresponding areas indicated by him in the potency growth curves were

those between the various minima or low points. His prediction on the basis of the curve characteristics was confirmed by the experiments. He spoke of the minima as transitional points on the borders of qualitatively different realms. But the vitalizing process reveals its threefold nature here too in its temporal aspect and quality.

According to Rudolf Steiner, when an unpotentized remedial substance is absorbed by the organism, it goes through all these steps, or part of them; the organism itself potentizes them. Pharmaceutical potentization lifts this substance in a three-phase vitalizing process in enhanced development of its remedial capacity.

Increasingly freed from its ties to matter, this remedial force rays into the diluting medium, but in a way specifically determined by the substance. Arnica introduces different qualities than does copper-vitriol, for example. It is the physician's job to bring the specific force characteristic of the remedy into right relationship with the disease-process. The fact that a qualitatively quite definite remedial force in the potentized medication matches every disease-process is well known. The manifold types of illness have their counterparts in the curative powers inherent in plants, minerals, and animal-derived substances. This seemingly trivial statement has a generally valid cognitive consequence: each organ process of a human being exists in isolation and one-sided development in the medicinal substances, so that these, taken in their entirety, present an image of the whole human being. The remedy is found in freeing the dynamics inherent in such processes from the substances in external nature and binding them to a medium. We can have recourse to nature's vast reservoir of formative forces and to combinations thereof when the task is one of curing too weak or missing or overwhelming specific organ-processes in the human body. Potentization makes this possible.

Before answering the question as to what must take place in potentizing to enable the remedial force to "ray into" the medium, another question—that of how such forces get into minerals, plants, animals and man—needs to be answered.

All matter, the organic as well as the inorganic, condenses in rhythmical processes. Plants grow in rhythms of day and night, of the seasons, in rhythms of light and darkness, cold and warmth, and so on. They are embedded in the time-stream with the rhythms of sun, moon and star-courses. Planetary rhythms can be read in the annual rings of old trees. Earthly matter is structured by the interplay of earth and cosmos. Lifeless matter itself issued originally from life-processes: the creation of calcium and coal as well as substances like silica, iron, etc. are increasingly recognized as final stages of earlier life-processes that prevailed on the entire earth-planet. But life-processes are invariably rhythmical, and can occur only in harmony with universal rhythms.

If we are going to talk about specific substances and effective forces as originating from the involvement of cosmic processes, we must also ascribe specific differentiations to occurrences in the heavens; we refer to the positions of the Zodiac and the planetary movements as they act through their specific qualities and their interplay in natural occurrences. The shapes of animals, the growth of plants and the qualities of metals have always been seen as specifically interrelated in their force-structure to the firmament, the Zodiac and planetary orbits with their specific qualities. But human beings themselves were looked upon as a harmonious concord of all such movements and forces. Spiritual science characterizes them as "primal movements" or "primal gestures," a cosmic weaving of the fabric of natural phenomena in all their figured variety. As Rudolf Steiner put it, "Man, as he confronts us, is a finished form. But this finished form is the product of movement, of primal forms coming into being and disappearing again. Movement is not the product of the resting state; still

forms proceeded originally from motion." Every separate part of nature likewise originated in such primal motion, and carries within itself these processes of becoming, coagulated into form. *Specific* movements and livelinesses are involved here, and are therefore eventually the basis of healing forces. If the harmonious interplay of all these movements in the human organism is disturbed, the remedy corresponding to these creative primal gestures can be taken from that extensive realm and used for healing.

We can now entertain the question as to how forces of this kind—frozen into the material world—can be restored to liveliness and bonded to a medium, and remain in that condition until such time as a patient needs them. This brings us to speak of the inner processes that take place in potentizing.

Obviously the measurable sense-perceptible remedial substance disappears to an ever greater extent as potentization proceeds. This means that observation focussed exclusively on matter sees only a stepwise dilution in progress, one which permeates all of nature: every natural happening is accompanied by a complementing visible or invisible process. For example, a *diluting* of earthly substances (comparable to a withdrawal from the terrestrial) is balanced by a *condensation* process of etheric universal forces running parallel to it (in other words, the inflowing of a cosmic element). The forces inhering in plants, minerals and so on ray into a potentizing medium such as water, and bind themselves to it.

Water is the model potentizing medium, for it is the universal element most closely related to man and accompanies him from birth to death. Other media employed in potentization—other fluids or milk sugar—have qualities similar to water, and can therefore be used in the same way.

Fluids are familiar to us as earthly substances, yet in many of their qualities they are oriented to the extraterrestrial realm of cosmic forces. These were first recognized and described as such by Rudolf Steiner, who introduced them to modern

scientific thinking. An abundant literature that has since come into being on the subject brings out the fact that everything conceived from the aspect of a central point is earth- and matter-related, while everything planar belongs to the world of formative forces. The periphery of the sky with its circumferential forces confronts the terrestrial "grain of dust" as an immeasurably expanded plane, the differentiations of which act upon living nature and its world of matter. It is able to work into nature the more powerfully the more it encounters expanded plane-surfaces in which it finds a related element. All life-processes likewise take place along surfaces. And large inner surfaces of this kind are indeed generated by rhythmic movements of fluids or granular substances. The shaking process creates adjacent surfaces between streams of fluid slipping past one another at varying speeds, along with innumerable bubbles, droplets and vortices, all of which present considerable surfaces. They are, as it were, the gate through which universal forces enter the world of earthly matter. They imprint themselves on these surfaces like a seal impressing its form into a mass of softened sealing wax. According to Rudolf Steiner, the medium is stamped with something resembling a structure during the potentizing process. The usual view of this is of atoms being transferred from the remedial substance to the medium. But considering all that has been said above, there is no need to attribute the imprinting of the medium to material transference of elements of the remedy, as point-oriented atomistic thinking has the habit of doing. Indeed, the fewer the atoms or molecules in the imprinting by the seal, the purer is the resulting picture. Here the Loschmidt count also loses any significance, for it can measure only the material particles that may be present.

Warmth-processes, warmth-differentiations and suctional forces are found along the aforementioned inner surfaces of the potentizing medium, brought about chiefly by rhythmical motion. They all point to the fact that these surfaces repre-

sent important thresholds across which the instreaming formative forces or combinations thereof can enter and join forces with the medium. A main characteristic of these universal forces streaming in from the cosmos is that, being suctional, they are the counterpart of the earth's gravitational forces.

Let us now look at a plant like the chamomile. It is formed of a unique combination of cosmic rhythms and forces. When we potentize it, just these developmental forces ray into the medium and stamp chamomile characteristics on it.

We might think of asking whether it might not be possible to get these forces directly into the medium or directly absorbed by it without resorting to the plant itself. Despite all the caution this problem demands, it is possible to answer this question positively, though a long path must be travelled before such a possibility is realized. Many of the author's experiments carried out with pure water have shown that this as yet unimprinted universal element can be imprinted from out of the universe. It resembles a delicate sense-organ which reacts to changing constellations and lets itself be imprinted by them. This depends, however, on some such agency as rhythmic motion, for example, opening it to the instreaming forces. The qualities of water change with the course of heavenly events; it resembles a mirror in its ability to reflect extraterrestrial happenings. Qualitative differences of this kind were demonstrated in the growth of plants.

It is perhaps clear from the above that the potentizing medium can be instilled with specific curative forces needed by the patient and which can be effortlessly absorbed by his organism, since it enters directly into the sphere of his formative processes. The potentizing substance thus becomes the bearer of forces rather than of matter, and can work the more effectively the less material substance is conveyed by the imprinting "stamp." The living spiritual picture of chamomile—to remain with the above example—will shine out the more distinctly in the medium.

The potentizing process which the patient would otherwise have to carry out in himself in his own metabolic, rhythmical and nerve-sense systems is rendered unnecessary by a pharmaceutical process taking place outside him.

It is impossible, in so brief a description, to do justice to all the problems connected with potentization. Aspects which could only be touched upon here will be found treated in greater detail in the works listed in the following bibliography.

Bibliography for Introduction

- Adams, G. and Whicher, O.: *The Plant between Sun and Earth*, Rudolf Steiner Press, London, 1980.
- Cloos, W.: *Lebensstufen der Erde*, Novalis-Verlag, 1958.
- Kolisko, L.: *Physiologischer und physikalischer Nachweis der Wirksamkeit kleinster Entitäten*, Stuttgart, 1960.
- Lehrs, E.: *Mensch und Materie*, Klostermann-Verlag, 1953; *Man or Matter*, Rudolf Steiner Press, 1985.
- Leroi, A.: *Rhythmische Prozesse*, Stuttgart, 1950.
- Pelikan, W.: *Heilpflanzenkunde*, Philosophisch-Anthroposophischer Verlag, Dornach, 1958.
- Pelikan, W.: Various papers concerning potentization in *Korrespondenzblättern für Ärzte* (1949, 1950), Weleda A.G.
- Poppelbaum, H.: *Mensch und Tier*, Philosophisch-Anthroposophischer Verlag, Dornach, 1956; *Man and Animal*, Anthroposophical Publishing Co., London, 1965.*
- Schwenk, Th.: *Grundlagen der Potenzforschung*, Verlag Freies Geistesleben, Stuttgart.
- Schwenk, Th.: *Korrespondenzblätter für Ärzte*, Heft 6/7, 1949, Weleda A.G. *Strömendes Formenschaffen*.
- Steiner, R.: *Von Seelenrätsehn*, 1917.
- Steiner, R.: *Geisteswissenschaft und Medizin*, 1920; *Spiritual Science and Medicine*, Rudolf Steiner Press, 1975.
- Steiner, R./Wegman, I.: *Grundlegendes für eine Erweiterung der Heilkunst nach geisteswissenschaftlichen Erkenntnissen*, 1925; *Fundamentals of Therapy*, Rudolf Steiner Press, 1984.
- Wachsmuth, G.: *Die ätherischen Bildekräfte in Kosmos, Erde und Mensch*, Stuttgart, 1924. *Etheric Formative Forces in Cosmos, Earth and Man*, Anthroposophical Publishing Co., London, 1932.*

* Note: all items listed as Anthroposophical Publishing Co. are now taken over by Rudolf Steiner Press, London.

Foreword

The problem of potentizing addressed in this book has become a matter of widespread interest today. It is a truly timely problem, one that deserves thorough investigation and calls as well for the forming of a new order of concepts. The fruitless discussions that have revolved around the subject for decades show how ill-suited traditional thinking about the nature of matter is to solving this comprehensive problem. The author sees in Rudolf Steiner's anthroposophical spiritual science a prospect of arriving at a fresh, far-reaching outlook over this field. And in the section on experiments he links up with L. Kolisko's epoch-making investigations, to which future research will always need to refer.

Considering the magnitude of the problem to be dealt with in these pages, it is obvious that this presentation cannot be complete and that a vast amount of experimentation and cognitive effort lies ahead. It was in response to repeated requests that the author decided to present certain basic aspects of work still in progress at the stage of their present incompleteness. The author must take full responsibility for any resulting insufficiency. Though certain details may appear in a changed light as time goes on, the picture as a whole will scarcely alter, since it is supported by the comprehensive, far-reaching research of Dr. Rudolf Steiner's anthroposophical spiritual science, without which a short sketch such as follows here could not have been attempted. The fruits of research that underlie it can, of course, be indicated only in extremely condensed form within the context of this publication. This follows the usual practice in scientific works, in accordance with which conclusions from the basic concepts are not necessarily traced back to their source in full detail. Those in question here are readily available to everyone today in the basic books of Dr. Rudolf Steiner. The author is certainly well aware of the difficulties involved in a mere sketch of an area

so comprehensive. But to be convinced of a thing must always mean experiencing it oneself at the point where a unified picture emerges from the perception of meaningfully related parts. Understanding of what follows also rests upon seeing it in its totality.

It would not have been possible to produce this work without the many-faceted help and encouragement of my colleagues at the Weleda, Inc., who also provided the research space and set-up. The author's special thanks go to all his co-workers, who, as the years passed, contributed their interest, diligence, and scientific exactitude to the extensive experimentation!

Theodor Schwenk
Schwäbisch Gmünd, Autumn 1954

Commentary on the Reprinting of this Book

It would make a poor showing if no further progress in this field could be reported and no new experimentation and cognitive advances had been made since this book was first published. And the question arises whether later work justifies bringing out a new edition.

It can be said with reference to the author's further work along these lines that the basic experiments with a new kind of experimental method which he developed to explore the role played by the fluid carrying-medium in the potentizing process have been exhaustively checked and completely confirmed. Full reliance can therefore be placed on the reports he has already made. A special comprehensive publication is envisioned to deal with cosmic influences on fluids in motion, an aspect to which this book is largely devoted; I will just mention this for the moment. The testing of potentized substances with a physical method was continued. Several examples were discussed in my book, *Bewegungsformen des Wassers*, published in 1967 (Verlag Freies Geistesleben, Stuttgart).

As to works of other authors, let me refer to the book, *Potenzierte Heilmittel*,¹ brought out last year by the same publisher. This contains the most important findings since the first edition of my book appeared. Though it is impossible to list them all singly, I would like to call special attention to works on basic experimentation by W. Pelikan and Georg Unger, A. Basold, A. Selawry, and to epistemological works by E. Marti. These devoted themselves exhaustively to the building of concepts of the various "ethers" and "etheric formative forces." They supply precise details where this volume keeps to a more general presentation.

Due to the author's heavy involvement elsewhere, a new edition is presently not to be thought of. So he decided to meet an expressed need by reissuing the book in unrevised form.

Herrischried, June 1972
Theodor Schwenk

Historical Aspects of Potentization Research

Preliminary remarks: The term "potentization" signifies a method of preparing remedies in which the medicinal substance is subjected to progressive rhythmical dilution. Two different ratios of dilution are the most commonly employed. In the one case, dilution is carried out in a 1:10 ratio, producing what is known as decimal potencies, while in the other the ratio is 1:100, resulting in centesimal potencies. In the following pages we will be referring exclusively to the more commonly used decimal potencies. They are produced by combining, say, one gram of the medicinal substance with nine parts of the diluting medium. One part of the resulting so-called first potency is then combined with nine parts of the diluted medium, producing D2, the second potency. The same procedure is repeated in a rhythmical sequence until the desired potency is reached. The number of dilutions corresponds to the degree of potentization. A medicine labeled D4 has thus undergone four stages of dilution in a 1:10 ratio. The resulting relation of the medicinal substance to the dilution medium has thus become 1:10,000.

Fluids and granular solids are both used as dilution media. The most commonly used fluids are alcohol in various concentrations, water, and in special cases oils. Milk sugar, available from large dairy concerns, has proved to be the most suitable of the solid media.

Fluid potencies can be prepared using either the single-glass or the multiple-glass method. In the latter case, a fresh flask is used for each successive step in potentization in order to avoid introducing remnants of more concentrated solutions into higher potencies. The experiments to be described below were all performed with the multiple-glass method.

The mixing of the medicinal substance with the diluting medium was carried out in the flasks, which were subjected to

a 4-minute rhythmical shaking in time with a metronome. The flasks were filled about two-thirds full and sealed with ground-glass stoppers. Mixing with milk sugar is usually done in a porcelain mortar with a pestle. The time element here varies as experience dictates. In the case of very hard substances the first trituration may take days, and is done in an agate mortar. All such vessels are thoroughly cleansed after every use, and the flasks are steam-sterilized. Scrupulous cleanliness and exactitude are, of course, absolute requirements for persons engaged in potentization procedures.

The main feature of what is commonly known today as the homeopathic approach to medicine is usually thought to be the practice of preparing remedies by subjecting them to more or less extensive dilution. But to view the potentization treatment of substances as the core of the method is to miss the real purpose, which is rather to find the right remedy. Homeopathy consistently stresses the importance of distinguishing between a methodical searching out of the remedy and the comparatively secondary matter of preparing it for use by means of potentization. The two aspects must also be viewed historically, having developed independently of one another. It is simply incorrect, in other words, to equate the concept of a homeopathic remedy with that of a progressively potentized or diluted remedial substance.

Although our main concern in this study will be with problems of potentized substances, we want to include a survey of the historical development of the so-called Simile Principle, especially since it will become ever clearer in the course of our discussion what close and inseparable ties exist between the method of finding remedies and their preparation by the potentizing process.

Strange destined events which we will not concern ourselves with here led the founder of homeopathy, Samuel Hahnemann (1755-1843), to experiment on himself with cinchona bark, the medicine used to treat malaria, in a way that brought

him significant insight. Studying the effect on his own healthy organism of ingesting cinchona bark, he observed it developing all the symptoms of the disease which this drug is used to treat. He underwent in the short time-span of a few hours the marked lassitude, increasing to the point of drowsiness, the cold-fingertips and feet, the pounding heart and racing pulse, and the shivering limbs familiar to him as malarial symptoms. Hahnemann felt that he had to make a statement revolutionary for the period:

“Substances which induce feverish symptoms are effective medicines for varieties of intermittent fever (malaria),” and “Cinchona bark, the recognized medication for malaria, possesses the capacity to produce malaria-like symptoms in a healthy organism.”

In 1796, the year which Hahnemann's discovery marks as the birthdate of homeopathy,¹ he formulated the principle not only of his approach to healing but to remedy-finding as well when he said:

“We should imitate nature, which sometimes cures a chronic illness by means of another, and use as a remedy for the illness we are treating that substance which is able to induce another, artificial illness as like it as possible; that will be the cure. Similia-similibus: like cures like.”²

The process of trying out on healthy organisms a great variety of natural substances and making exact records of the effects observed has led, since Hahnemann's remarkable discovery, to the amassing of a very considerable treasury of experiences which can be drawn upon for the treatment of the most varied symptoms of disease. This treasury is a monument to homeopathic remedy-research, a method signalized by the above-mentioned Simile Principle.

matter how these questions are put, their content must be brought into special relevance with the fact that matter disappears in the process of potentization and forces make a simultaneous appearance. It was not destined that homeopathy, Hahnemann himself, or the majority of his followers, even those of recent years, not to mention scientific researchers, should concern themselves seriously with these questions. Instead of delving into the many layers of the problem and studying all the factors that play into it, their attention was riveted on matter alone. Physicists and chemists, prisoners of their hypotheses, cannot get past the limits of Avogadro's Constant* (a numerical point), beyond which they can no longer assume substantial matter to be present in the medium—and they cannot conceive of any but material sources of medicinal effectiveness. Physicians, in their daily contact with patients, do indeed obtain concrete experience of a world of forces which makes itself felt from beyond the dilution threshold. But all these scientists lack the concepts vital to a grasp of the "spirit-like" realm of which Hahnemann speaks with such conviction.

Now before we go further in our contemplation of the historical development of the potentization problem, let us again turn our attention to Hahnemann's original experience with the medicinal substance, cinchona bark, since it raises a question of basic importance. To overlook it would result in a shallow, purely routine treatment of the Simile Principle. The question is: Whence came that strange exact correspondence between the illness of malaria and the symptoms of illness evoked in a healthy organism by cinchona bark? In the case of the natural illness we see certain bodily organs affected and damaged in their function and structure, a situation exactly mirrored when a healthy person ingests cinchona bark. How are we to understand the existence of two identical functional complexes appearing in nature completely isolated from

* also known as the "Loschmidt count."

each other, one in a "naturally" ill individual, the other in a person artificially made ill as a result of ingesting cinchona bark? Functional processes of the human organism must unquestionably also exist in some corresponding way in cinchona. *How do they get into this plant?* This question may be asked equally reasonably in the case of all other effective remedies discovered by homeopathy. Put another way, the sum-total of functional activities in the human body is found again, extended over the substantial realm of outer nature, in the multiplicity of plants possessing remedial properties. There exists in every such plant a specific functional complex which can be produced to order, with all its unique characteristics, in the healthy human organism. Substances derived from nature could otherwise not be used as curative agents.

What is the background of this correspondence that has obviously existed since time immemorial?

This question is part of a larger one involving the development of man and matter in the long history of world evolution. Should these two be looked upon as originally one, that only gradually split into two separate branches? To answer this question raised by the Simile Principle is vital to its illumination, and will enable us to grasp its basic significance in far greater depth than would be possible in a purely empirical approach.

Scientific investigation of the homeopathic "law of similarity" will therefore have to take as its point of departure the question of the interrelatedness of man and the realm of matter, of the striking attunement of organic processes and medicinal forces. An enquiry of this kind embraces the further question of how man and matter developed in cosmic evolution and of the way the material world was condensed out of a world of forces. On the other hand, a scientific penetration of the potentization problem will take its cue from the question introduced above on the score of the disappearance of substance, the transition from a ponderable state of matter to

one where, under certain conditions, no ponderability is found, and forces alone are at work.

Both questions: that of the origin of matter and that of its disappearance, are related to one another as a picture to its mirror-image. *A solution to the question raised by the potentization problem may be expected to contain the answer to the question of the Simile Principle as well, and also to bring about a true synthesis of the heretofore separate practices of homeopathic remedy-finding and remedy-preparation.* This may explain why it was felt appropriate to allot space to mention of the Simile Principle within the framework of a discussion devoted to the potentization problem.

At the same time that Hahnemann, in a life rich in destiny, brought his two discoveries to mature practical fruition, phenomena of a kind that must definitely be viewed as having a bearing on our questions came to be noted. We are referring to catalysis, whereby the mere presence of certain substances either enables chemical reactions to take place or accelerates them without the so-called catalyzing agents themselves undergoing any physically or chemically discernible change or becoming exhausted. In this case, too, attention shifts from chemical and quantitative aspects to the qualitative, specific uniqueness of the catalyzer, for example. The influences and great significance of the so-called trace elements, of vitamins, enzymes, and biological catalyzers show conclusively that where they are active at important guiding points they occupy a place in the realm of life related to the scene of action of the potencies.³

We will now proceed with our review of the history of the potentization problem by selecting the most comprehensive of the considerable number of works that bear witness to the efficacy of potentized substances and by calling attention to a listing of literature on this subject worthy of closer study; it was assembled by H. Siewecke, M.D.⁴, L. Kolisko⁵ was one of the first to undertake systematic experimentation in this area,

applying a number of biological as well as physical tests. In 1920 she asked Dr. Rudolf Steiner what would be the most favorable degree of dilution in the case of a veterinary medication. He replied,

“Put plant seeds to germinate in various dilutions, and you will obtain a growth curve. Study this curve, for it will reflect the vitalizing process which the medication will produce in the animal’s body.”

Later on L. Kolisko performed many series of plant experiments, using wheat seeds in particular and studying the effect of solutions of substances subjected to varying degrees of rhythmical dilution. One part of a solution was mixed in a flask with nine parts of the diluting medium and shaken for a certain length of time; then one part of this was mixed with nine parts of the medium, and so on. The number given the potency indicated the the degree of dilution, as we previously mentioned. D6, for example, equals 1:10 to the sixth power, or 1:1 million. In experiments performed over and over again with heavy-metal salts, typical effects of particular potencies were obtained, showing up in the way plant growth was influenced. The curves mentioned by Rudolf Steiner were ascertained for many substances; they exhibited characteristic features, the minimas and maximas, in comparisons made with the curves of plain water controls. Most of the experimental series were continued far past the Avogadro Constant (approximately D23), up to D60, or even higher. The reality of the effectiveness of potentized substances, which physicians too have come to know, is clearly demonstrated in L. Kolisko’s experiments, right up to the highest potencies she used. Physical proof, obtained using the filter-paper capillary-dynamic technique, evidenced the same substance-related, characteristic types of curves. We will return to a more detailed discussion of Kolisko’s extensive work in connection with later mention of the author’s own experimental results, obtained by the same methods.

Further exposition will start with a description of the way the potentizing process affects the realm of substances, and go on to consider the question of the relationship of that realm to the realm of forces in Hahnemann's sense of remedial forces. The factors that must be taken into consideration in potentizing procedures, such as the particular characteristics and significance of dilution media, processes of movement in these latter, the physical facts involved, and so on, will be covered in detail. This way of proceeding will not only further an understanding of potentization as such, but will prove helpful as well in understanding the answers to basic questions concerning the potency problem which are provided by the experiments to be described.

II Instreaming and Outstreaming Forces

No matter what specific remedy we may be potentizing, it has to be derived from the realm of substances surrounding us in nature. When we concern ourselves with its earthy aspects alone we are dealing with the inorganic realm dominated by chemical and physical forces. When we turn our attention to the living world it must immediately be raised beyond the earth, to regions from which non-terrestrial forces come streaming in. Without the forces of the sun no living creature can embark on or maintain its life, and the rhythmic cycles of growth and propagation of many organisms are geared to rhythms of the moon as well.⁶ A deep-seated difference is manifest in the very fact of the existence of a living and an inorganic realm. The inorganic mineral substances of the earth's crust are found to be subject to binding and separating forces, to a leveling process wherein energy differences (potentials) are equalized; in thermodynamic terms, subject to the Carnot Principle: natural processes of a purely earthy kind are bound up with a decay of energy, inasmuch as the portion of free energy which nature needs to have at its disposal for performing work decreases with every natural process (in other words, entropy increases). Differences in temperature are equalized; the end of this process would be the death of the earth. In chemical terms, this would mean a tending of chemical elements to a stable inner condition.

That these earthly forces are accompanied and permeated by others of an opposite nature is proven by the very fact of life's existence, for it is inconceivable that life could develop without the constant activity of forces that overcome death and counter the decay of earthly energies. These activities are obviously non-earthly, cosmic gifts that make their way visibly into organic nature and oppose gravity's all-leveling action. They are levitational rather than Carnot's leveling forces.

Another element thus claims a place for itself in the force-field of the gravitational potential of the earth-planet, an element in which we find a build-up of substances, a raising of energy potential taking place. We would like to borrow from Vernadsky, a far-sighted geochemist, a term for that further force-field, and call it the biosphere. It is the realm described in anthroposophical spiritual science as the world of so-called etheric forces.^{8,9,10} Vernadsky includes the following in what he has to say about it:

“Life-phenomena are empirical facts very difficult to fit into the framework of other natural forces in Carnot’s sense. The decrease of free energy and its dispersing in the form of heat does not occur . . . in the case of life-processes. The very opposite holds true. As a result of the fact that these organisms exist, free energy capable of performing work is found to increase in the environment of these organisms toward the end of their life. The free oxygen developed by plants, the coal formed of their remains, the compounds contained in their organisms which serve as animal nutriment, their motion, and a multiplicity of other chemical and physical processes all give evidence in the working of living organisms of a new free energy, unaccompanied by any kind of decay of energy in the sun’s radiation.

“The sum-total of plants and animals—in other words, of the entirety of living nature—thus presents a natural phenomenon counter to the Carnot Principle as usually interpreted. There is usually a build-up of free energy in the earth’s crust as a product of life-processes and a multiplicity of other related processes.”

Vernadsky is by no means alone in his speculations. Prigogine¹¹ has similar things to say in a comprehensive new

work on thermodynamic problems. He too finds classic thermodynamic concepts inapplicable to life-processes. In his view those concepts apply to isolated special cases within a much more comprehensive thermodynamic sphere, which also includes the so-called irreversible processes in open systems. But life-processes belong in just such a category with their forces, which lead them counter to the Carnot Principle and in the direction of a greater degree of differentiation and organization.

But does insight of this kind not impel us to further questioning and to an extension of the traditional physical and chemical concepts which are still being applied to the living realm? Scientists of Vernadsky’s stature certainly feel the need for a forming of new concepts. And as a result of his contemplation of life-processes he himself states that these present scientific investigation with the profoundest mysteries to which it has thus far ever addressed itself (cf. also W. Cloos¹⁰). It may not be widely known that R. Mayer, Thomson, Helmholtz and Huygens were already moving in the direction of this kind of thinking and concerned themselves with the energetic differences between living and non-living matter. But are the questions that immediately arise here sufficiently recognized and asked in the depth and with the thoroughness they deserve? One such question would certainly be: How must we conceive and investigate the force-field of the biosphere in which laws the polar opposite of those presently known to classical physics and chemistry obviously operate? The term, “anti-Carnot forces” merely recognizes their existence; it indicates nothing of the way they function. Can the essential nature of this realm of forces be grasped at all with traditional chemical and physical methods in view of the fact that it is obviously of a different order and actually cancels out earthly chemical and physical activity?

We called attention above to that other realm streaming into the earth from its surroundings, announcing its presence

in the form of energies not yet understood. For we may reasonably ask how it happens that the energy streaming in from the sun is not just dispersed but seized upon by plants and applied in their life-processes to heighten energy potentials. There are obviously forces at work here exercising more than merely energetic functions, forces able to manipulate these energies, guiding, organizing forces of a differentiating rather than a leveling nature.

It remains the achievement of Dr. Rudolf Steiner to have recognized and investigated in detail this realm of guiding, organizing formative forces. He was describing and systematizing for instruction purposes not only that realm itself, but the route and method for researching it as well, and this at a time when scientists were first confronting the riddles posed by the world of life-phenomena. Long before Vernadsky talked of a "sphere of life," concrete descriptions of the dynamic realm underlying it had been presented by Rudolf Steiner.¹² And it was the portal to this same realm before which Hahnemann stood, feeling the first rays of light-to-come streaming through it, when he was moved to speak of "spirit-like forces."

Findings of modern spiritual-scientific research indicate the existence of formative, matter-organizing forces and energy potentials polar to those of a terrestrial nature. If, in the physical-terrestrial realm in general, quantitatively measurable forces moving in a certain direction can be described as raying out from a central point toward the periphery, formative forces of the etheric realm may be described as polar thereto. In their book, *Fundamentals of Therapy*¹³, Steiner and Wegman write:

"The phenomena of life show matter to be governed by forces that work from outside inward, toward a relative center. On its transition into the life realm, matter must withdraw from the outstreaming forces from the earth and ally itself with those streaming in. Now every earthly substance and earthly process too has received

its outstreaming forces from the earth and possesses them in common with it. While such substances merely compose part of the earth's body they are just as chemistry conceives them. When they come alive, however, they cease to be just parts of the earth. They withdraw from association with it, and become allied with forces raying into the earth from all around it. When we perceive a substance or process that is involved in a living development, we have to picture it withdrawing from association with the forces that work upon it from the earth's center and entering the realm of other forces, related not to a center but to a periphery."

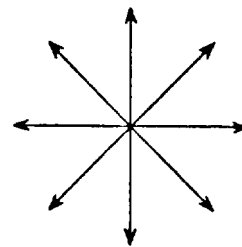


Fig.1

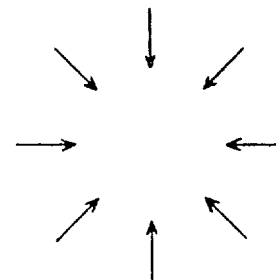


Fig.2

In Figure 2, they ray in from the periphery in a direction counter to that of the forces raying outward from a center in Figure 1, and their starting point consists of the entire circumference, an infinitely extended surface. Since the term "central forces" is used to designate the earthly forces in Figure 1, the term "universal forces" may be applied to those depicted in Figure 2; they are to be conceived as in every respect the polar opposite of the terrestrial forces. The latter are pressurizing, while the former give rise to suction, to space-negating effects. In them, forces of lightness and buoyancy confront forces of earthly heaviness.¹⁴

The world of organisms owes its existence to its placement in both the terrestrial and universal force fields. Earthly forces alone can result in leveling and contraction only; they work in concert with the buoyant universal or etheric formative forces, in alternating play imprinting the designs of the form-world upon matter. The sap-stream of trees, ebbing and flowing in daily and seasonal alternation, brings the activity of the universal forces into manifestation, and plant metamorphosis is the most visible scene of this activity. They manifest their organizing, energy-directing nature here, remaining themselves incomprehensible as energies. If we were looking for a corresponding image in the realm of matter, the above-mentioned catalysts and their directing action in the life-realm especially might be considered. But we refer to them here only as representative for purposes of studying the transformation of substances, not in relation to structure in the organic form-world. The formative forces unite both aspects, that of the transformation of substances with an attendant increase in energy potentials, and that of form-building. It is just in the latter case that they enter into full visibility and show themselves to be forces acting from the cosmic periphery.

We see the earth-sun relationship in the orientation of plant-stems and tree-trunks (geotropism, heliotropism; cf. Adams, *The Plant Between Sun and Earth*).^{15,16,17} But the spiraling of leaves around the vertical stems mirrors the patterns drawn by the various planets of the solar system as they move, each on its own particular orderly path. Every species of plant carries out its own unique design with precise numerical relationships in the setting on of leaves around the stem, wherein the planetary orbits can be rediscovered.¹⁷ Figures 3 and 4 compare the curving course of an orbit of Venus over an 8-year period (the earth is shown at the center, drawn to scale) to the pattern of a silver thistle blossom.

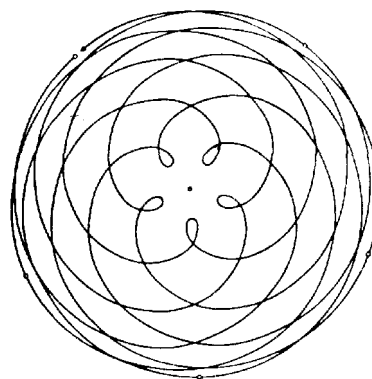


Fig. 3

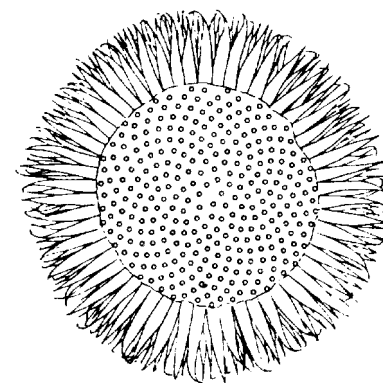


Fig. 4

Certain patterns of movement in the extra-terrestrial, starry universe are to be found reflected in the microcosmic plant-world; rhythmical processes in the cosmos repeat themselves in compressed form in earthly space. If we look up into the heavens and observe the planetary orbits through the years and then turn our gaze to the plant kingdom spread out over the earth's surface, we see the same laws at work in its growth processes, here again compressed, but in this case with respect to the time element; what took its majestic course in the universe over a period of years and decades repeats itself in a brief time-span in microcosmic mirroring.

The etheric formative forces that have created the corporeal aspects of all existing organisms and, in so doing, wrested *matter* away from earth's leveling forces, are found to permeate not only the finished forms of plants but, above all, the processes involved in their development. Substances are thereby brought into a state of *suspension* in that they are laid hold upon by the life-element in plants, animals and man and

incorporated into their "force-fields." When these forces withdraw at the death of a living organism, the central leveling forces of the earth take over and guide the "suspended state"—as in the case of labile albumin—back into the stable earthly-chemical condition.¹⁸ The creation of form as well as the build-up of substances thus show themselves to be piloted in living organisms by a realm of forces that must be viewed as connected with the cosmos; it cannot be understood from a terrestrial angle.

All living earthly matter is impregnated by the cosmic rhythms described above. Further influences come into the picture in the case of beings possessing souls and individual spirits, influences which in turn affect shaping and substance-building processes (as in the specific types of protein in various organisms). We will not go into further detail about these matters here, but simply let a single speaking example serve to remind us how cosmic rhythms, compressed in both space and time aspects, are found in the human organism. We are referring to the rhythm of the breath, which consists of an in- and out-breathing repeated 18 times a minute. A day in a human life thus averages 25,920 breaths ($24 \times 18 \times 60$) drawn in this rhythm.¹⁹ This figure turns up again when we count the number of days in the lifetime of a person living 72 years, and again in the number of years it takes for the rising point of the sun at the spring equinox to make the entire circuit of the zodiacal constellations. A true heavenly ladder of rhythms of equal numerical relationships thus extends from the starry universe down into microcosmic man, who bears within him the measure of all things. The cosmic breath of the Platonic World-Year is attuned to the rhythm of 25,920 earth-years. The great breath of a human life too, drawn in and out in 25,920 days of earthly living, every one of which witnesses 25,920 drawings in and out of breath! A stepwise descent of cosmic processes can be followed at will, right down into essential life-functions, where this cosmic activity comes to an

end in a build-up of substances. At death, when the formative life-forces are completely breathed out and the substantiality which, until that moment, had been wrested from death falls victim to the action of earth-forces alone, the suspended state of labile material organization also terminates and ends up in the inorganic elements. Here the evolution of substance runs out, in a dried-up, lifeless object, into the mineral world, in the "final step of God's creation."

III

The Evolution of the World of Matter

Now that the groundwork has been laid in the preceding chapters we should go on to consider a question raised at the start of these studies, one that will prove particularly pertinent and basic to the potentizing problem. That is the question of how the inorganic world surrounding us came into material existence. Anthroposophical spiritual science answers it from the standpoint of an organic orientation. It shows that just as the death of an individual living creature allows the materiality which, up to that moment, had been maintained in a condition of labile balance, to sink into the inorganic, chemical realm, so matter developed over a long course of evolution out of *living* processes and states of being. It has arrived at its present-day crystalline or amorphous condition after having passed through a series of phases in which, though still life-permeated, it became ever further densified. Rhythms originating in the starry universe still participate in the development of every living thing. In earlier times, processes through which life pulsed on this earth-planet were even more strongly influenced by cosmic-dynamic rhythms.²⁰ What surrounds us today as a dead mineral environment came to be as it is only as a result of gradual stages of densification and of the death-process of aging. Man's development too, though not to be conceived as taking place as yet in the material realm, must be conceived as bound up with these same life-processes; he was embedded in the surging life of the planet's whole organism, invisible though he would have been to eyes such as we presently possess. Only as the densification process proceeded and the kingdoms of nature had gradually been precipitated did man appear, hesitantly at first, in physical manifestation. He was the last living creature in the planet's history to put in a corporeal appearance, although he must be looked upon spiritually as "the first-born of creation." The

manifold forms encompassed by the various kingdoms of nature are viewed here as products of one great planetary organism.

Spiritual-scientific literature provides a comprehensive picture of the emergence of the natural kingdoms, showing this development progressing through a series of various characteristic stages.*

In the course of a long evolutionary development, a condition called by Rudolf Steiner "the ancient Saturn stage," which originally consisted entirely of warmth-differentiations, underwent gradual densification, first into the aeriform condition of "the ancient sun," then into a fluid state, that of "the ancient moon," and finally into the solid condition of the present terrestrial mineral kingdom. The creations are described as disappearing again and going over into a resting state between the several steps of the densification process. A brief recapitulation of the previous evolutionary steps occurred, in accordance with the basic biogenetic law governing organic recapitulation, at the beginning of each next advance. But a further facet of this development must be noted here: Whenever world evolution takes a downward step into the next stage of densification, an imponderably working etheric formative force is, so to speak, "freed upward." Thus, when the warmth-state of ancient Saturn densified at the second step into the aeriform condition of the ancient sun, an upward freeing of so-called "light ether" occurred. After this planetary stage had been dissolved and a resting phase had taken place, the ancient moon came into being, in the course of which development the gaseous condition underwent further densification into fluidity. This was again accompanied by the freeing of an etheric force, that of "chemical or sound ether." After dissolution of this planetary phase and a further

* These matters can be touched upon only very briefly here. Dr. Rudolf Steiner's *Occult Science, An Outline* is recommended for a detailed study.

resting period, the incarnation of the earth proper followed, with a repetition of the preceding phases. The fluid state densified into the solid condition, and "life ether," an etheric force "finer" than those preceding it, was emancipated. These several etheric formative forces now carry out each its own characteristic activity, which can be discerned concretely in the various phenomena of nature (cf. G. Wachsmuth).⁸

Every living organism is built of a particular complex of etheric forces which represents a transcendental body of forces, called an *etheric body* or *body of formative forces*. We have already shown that the etheric formative forces contrast, as "universal forces" raying in from the periphery, with the central forces of the earth; the individualized complexes of etheric forces (etheric bodies) of the various species of living organisms must be conceived as being in contact with these universal forces. We need feel no surprise, reviewing the planetary developments in the course of which the several living as well as inorganic natural kingdoms gradually evolved from one all-embracing whole, at still coming across many mutually attuned relationships and "adaptations" in nature. Opportunity will be afforded in the following chapter to focus, with reference to potentization, on a case in point. The key to an understanding of the simile principle is found here in the fact that quite definite organic functions in the human organism have been "deposited" in nature in the various medicinal plants. Spiritual science provides descriptions of such correspondences. At the period in world evolution when the human heart was being formed, differentiation into the natural kingdoms was already underway, and plants like *digitalis*, for example, which still today represent reflections of one-sided, excessive heart-functioning, came into being. From this point of view it is man, who appears last in world evolution, who unburdens himself of the kingdoms of nature by casting them out into separate existence, as in the various plant species, retaining only as much as his evolution re-

quires.²¹ In cases of illness he can then fall back upon that reservoir of differentiated organic processes and make use of them for curative purposes.

Spiritual science describes the coming into being, during the earth phase, of the stony mineral realm as the result of its separating out from what had originally been life-processes. Many geochemical processes which we observe taking place today would remain essentially incomprehensible if it were not for the light thrown upon them by such accounts derived from Rudolf Steiner's spiritual science. If we do no more than try to apply them as working hypotheses to such natural phenomena, they seem to provide the key to much that would otherwise remain a riddle. Vernadsky, the geochemical research earlier referred to, has, for example, discovered a striking regulatory process which governs the total amount of oxygen in the earth's functioning. It is a known fact that, in inorganic nature, oxygen is constantly undergoing exchange into stable compounds.²² The oxygen total nevertheless remains constant. Processes of an opposite kind must therefore be going on to release it again.

"Anti-chemical processes"* at work in the plant kingdom are responsible for this. Contemplating these significant regulatory processes, Vernadsky finds himself having to speak of a *cosmic significance of organic life* on our planet. The organic activities still possessing "cosmic-planetary" significance appear to be the last remnant of a condition that was once wholly life-permeated. When Vernadsky describes, in another passage, how "numberless examples of heterogeneous living substances—to some extent too of living rock species—may be glimpsed in tropical forests, in intermingling herds of animals, in the rich life of great rivers . . . in the endlessly varied composition of flora and fauna" of certain areas, he is already touching on evolutionary processes of our planet

* A term used in this connection by Dr. Rudolf Steiner.

which anthroposophical spiritual science describes in a more complete picture of what is clearly involved.

We quote Vernadsky further in his comment on the final phases, still observable today, of the evolution of certain specific substances:

“If we study several special occurrences of silica, the significance of living substance is . . . still greater. There are silica organisms that contain over 10% of silica by weight . . . Many of these organisms are extremely widely distributed and form tremendous masses of living matter on the earth’s surface. Organisms of this kind influence the whole geochemical history of silica. Billions of them are constantly building deposits amounting to millions of tons of colloidal silica (silicon dioxide) in opal form on ocean floors and on the surface of the earth. A hundred thousand square kilometers of the ocean floor are covered today with silicic acid remains of diatoms, radiolarians and silica sponges . . . Similar processes certainly also occurred in past geological ages. Many kinds of present-day metamorphic and sedimentary rock—quartzite, jasper and others—are their transformed products. The opal component in them turned into quartz. We do not know of any more extensive silica processes in the earth’s crust. The largest accumulations of pure silicon dioxide (quartz) came into existence on these biochemical paths . . .”

A close study of the processes that brought certain iron ores into existence led Vernadsky to the conclusion that these too are highly probably related to the life-processes of organisms, and he found reason to speak as follows on the subject of the earth’s extensive calcium deposits:

“The more attentively one studies the processes going on in the earth’s crust the more convinced one be-

comes that they are largely attributable to biochemical* sedimentary action. We know, for example, of no single chemical reaction that brings about an accumulation of calcium carbonate without some connection with life.”

The American investigator, Lawrence J. Henderson, expresses similar conclusions in his book, *The Fitness of the Environment*,²³ which is well worth studying:

“. . . We appear to be led to the assumption that the genetic or evolutionary processes, both cosmic and biological, when considered in certain aspects, constitute a single orderly development that yields results not merely contingent, but resembling those which in human action we recognize as purposeful . . .”(p.279)

World evolution proceeded, as we have shown, in rhythmical stages, until the concomitant densification reached the solid mineral state of matter. But rhythm is a feature of life, and we still see organic matter coming rhythmically into existence. The wood-forming process²⁴ takes place in a summer-winter alternation; substances are rhythmically excreted by organisms, and are often built in rhythmic patterning into the bodies of living creatures (e.g., oyster shells). Rhythm is a process that permeates the entire realm of matter and imprints the movements of the stars on many of the forms of the natural kingdoms. The plants’ leaf-spirals, the formation of wood accompanying sun- and planetary rhythms, many processes in the sun-spot cycle that can be observed right down into the forming of substances, all point to the pattern-creating realm of the formative forces that ray in from the earth’s environment (cf. Bortels and others).²⁵

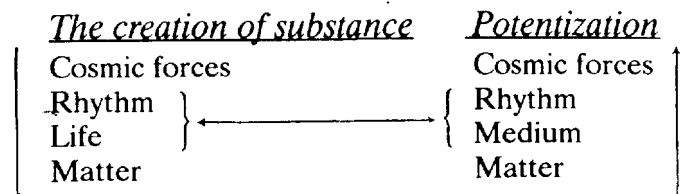
The life-processes occupy a median position. Life loses matter into the realm where it becomes inorganic nature, all the while absorbing cosmic formative forces from above; it

* Author’s note: i.e., originating in life-processes.

opens itself upward to receive, and imprints what it thus takes up onto the world of material forms below. It stands between the two realms, not only as a median condition, but playing a mediating role linking earth and cosmos. And here we point to processes which are also involved in potentization, though they take place in an opposite direction. If we may say that in the creation of matter substances are released from cosmos-derived life-processes, we may describe matter being made, in a certain sense, to disappear under potentization and the "spirit-like" medicinal force brought to the fore. Side by side with the diagram depicting the descent of substances into material existence (see below) stands its mirror-image depicting their ascent in the potentizing process. Lifeless substances are taken up from below by the potentizing medium and undergo a series of orderly rhythmical procedures which release upward inherent spirit-like forces of cosmic origin. Must these not be the very same force that accompanies man and the kingdoms of nature in their descent? That is what fits them, suspended in the diluting medium, to work as healing forces on diseased organisms. *Just as the plane of life-activity occupies the median position in the creation of matter, so the rhythmically treated diluting medium holds the middle place in the release from materiality of substances subjected to the potentizing process.* Since potentization and the creation of substance are related as a picture to its mirror-image we must expect that reciprocal relationships exist between life as the median element in one case and the corresponding diluting medium in the potentizing process in the other. And the question arises whether the medium, like the life element, does not also wear a Janus-face that looks in two directions, one toward the earth, the other toward the cosmos—for it is of a nature that finds its "life element" in rhythmic play.

We turn now to the task of characterizing the potentizing medium, its material qualities, and the way it manifests its essential nature in relationship to living nature.

We summarize the above as follows:



IV

On the Properties of the Fluid Medium

After making a thorough study of the subject of water, Lawrence J. Henderson has this to say about it in his important book, *The Fitness of the Environment; An Inquiry into the Biological Significance of the Properties of Matter*.²³

"... Water, of its very nature, as it occurs automatically in the process of cosmic evolution, is fit, with a fitness no less marvelous and varied than that fitness of the organism which has been won by the process of adaptation in the course of organic evolution.

"If doubts remain, let a search be made for any other substance which, however slightly, can claim to rival water as the milieu of simple organisms, as the milieu interieur of all living things, or in any other of the countless physiological functions which it performs either automatically or as a result of adaptation.

"In truth, Darwinian fitness is a perfectly reciprocal relationship..."(pgs. 131-132)

We showed above in a quotation from Henderson that he viewed water as having a cosmic role as well. The regulatory processes in the oceans of the earth may be singled out as a concrete example of this generally obtaining fact. Henderson says of these processes:

"... But it is at least worthy of mention that the regulation of the ocean in general bears a striking resemblance to a physiological regulatory process, * although such physiological processes are supposed to be the result of organic evolution alone. Very much

* Author's note: i.e., vital functions in a living organism.

this same idea occurred to Palitsch in the course of his investigation of the alkalinity of the ocean. The resemblance is more obvious still when the stability of all the more important physical conditions of the ocean are taken into account. Indeed, however difficult it may be to make out those subtle traits of physiological processes which account for their efficiency, their adaptability, and their exactness, I feel sure that no one who is thoroughly conversant with the general characteristics of the life process can fail to see a rough counterpart in the means by which conditions in the ocean are regulated.

"The existence of efficient regulation of the ocean, establishing its most important physico-chemical characteristics as constants, is of far greater importance in the sciences of nature, especially for living organisms, than could formerly have been guessed."(pgs. 188-189)

In the interests of rounding out the picture of the watery element as we study it, we may profitably look into several distinct bases on which the existence of these regulatory processes rests. Henderson says of them that,

"... Chemical science is still a very long way from accounting for the simultaneous occurrence of the various characteristics of water..."(p. 277)

Very few natural substances are capable of absorbing as much heat as does water; its specific warmth is among the highest encountered in the realm of matter. This is what makes the earth a suitable dwelling-place for living organisms; this property enables inconceivable volumes of water to absorb tropical heat and to transport warm ocean currents into cooler areas, where it is released. This means that a constant balancing out of opposites is taking place on the basis of this heat-absorbing capacity, made the more effective by properties inherent in the water-evaporation process. Tropical heat

would be even less bearable without this regulation, as the cold of polar regions would be on the other hand. Huge volumes of heat are thus shifted about in the oceans, while cold currents effect a balance by moving from the poles to the tropics. No less important are the roles played by water's warmth properties in the earth's air-mantle, where they supply the motive power of the great atmospheric circulatory processes. Here, the volume of latent warmth, that is, the storing of large amounts of warmth due to evaporation of water, is released again as a result of condensation (cloud formation). A thermal exchange similar to that occurring in the oceans also takes place between widely separated parts of the earth.

But water demonstrates that it is fitted to do more than regulate the earth-organism as a whole. It has a no less essential role to play within organisms which are predominantly permeated by this "life-element." A wide perspective opens here on processes involved in past phases of world- and human development when we consider the fact that even today water heats up most readily at 37° C (98.6° F), the temperature of man's fluid organism.* We see all the features whereby life-processes are supported coming to expression through the agency of water. No essential being goes against its own nature; all its manifestations help to fill out its portrait and confirm or amplify what has already become known about it. And this holds true of water also. It has the well-known characteristic of reaching its greatest degree of contraction, that is, its greatest density, at 4° C. This means that solid ice is a more expanded or lighter substance than water in a fluid state, and hence floats on its surface. Ice would otherwise sink to the bottom of lakes and oceans and eventually transform the waters of the earth into wastelands of life-destroying ice. This life-threatening danger is averted by the characteristic noted.

* Water responds to heating with a greater increase of warmth at 37° C than at any other temperature.

Atomic-physical research can at most discover the "how" of such an "anomaly," but it can never fathom the wisdom that has brought it about, the "why" of the matter. The regulating of the temperature and salt content of the oceans is founded upon just the above-mentioned properties of water, for water with a temperature of 4° C sinks to the sea-bottom because of its maximum density at that degree, while rising at a higher temperature. A thorough mixing on a huge scale provides for constant temperatures and a balanced material composition of the earth's great water-reservoirs, and is thus able to achieve that median balance upon which life depends. As Henderson says,

"It seems, therefore, almost safe to say, on the basis of its thermal properties alone, that water is the one fit substance for its place in the process of universal evolution, when we regard that process biocentrally."(p. 110)

Water's further properties, contrasted with those of solid bodies, for example, can, without further ado, be ranked in the warmth category beside those already mentioned, for "no other chemically inactive solvent (author's note: water is *neutral*) can be compared with water with respect to the variety of substances it can dissolve or the quantities it can hold in solution." Almost all substances soluble by water can be used by living creatures only in solution. Wherever we look, we see how this element both gives and takes in order to serve life. It is unsurpassed in this characteristic; it belongs to the realm of superlatives, reflected in the uniqueness, the induplicability of its constants, qualities with which it is continually laving and endowing the world of living phenomena. Among these superlatives is the fact that water is the fluid with the greatest di-electric constant and the highest degree of surface tension—two facts which characterize the unique role water plays in colloidal structures, but in all chemical processes in their way as well.

Now that we have demonstrated that the watery medium, the basic medium used in potentization, is indeed the archetypal life-element let us focus our attention on its role as mediator between the earthly world of matter and the cosmic world of formative forces. The concept of water occupying a realm midway between earth and sky and able to serve as the basis for the life generated in that same median realm as well has been a fundamental one in our contemplation. To what extent does water show itself oriented to the heavens, to what extent related to the earth?

As water is a substance of the planet earth, it naturally takes part in its terrestrial nature. But beyond this fact, water actually forms an enclosing sheath around the earth, encircles it in ocean currents, and, as part of the atmosphere, patterns every drop upon it. Every lake is a piece of the ideal surface of the whole planet; all lakes are in this respect a single unit and are "ideally" connected. On the other hand water has many cosmos-oriented features which are the very reason why it is able to serve as a mediator, carrying cosmic forces into earthly processes. So, despite its inclination to the earth, it overcomes gravity to some extent by opposing to it its own buoyancy. It arranges its forces of heaviness in accordance with the working pattern of the universe: acting vertically on the surfaces of submerged objects, pressing on them at every point with the weight of a column of the water above each such point (cf. Figure 5). The resulting abundance of upward striving forces produces the so-called static buoyancy of the Archimedes principle.

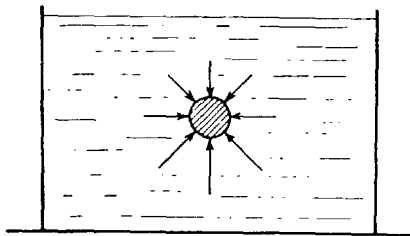


Fig. 5

Water forms a closer bond with the instreaming universal forces as a result of the patterning of forces appearing in these *static* conditions that have produced levitational action. This situation becomes the more pronounced in the configurations engendered by its *motion*. As soon as water exceeds a certain critical velocity it begins to form vortices. Whirlpools of this kind in water cannot, however, be compared to rotation in fixed objects, like the motion of a carousel, for example. They tend rather to a certain ideal form of rotation which is in exactly inverse relationship to a turning wheel as regards the distribution of velocity in a whirlpool area.^{26,27} While a revolving wheel reaches its greatest velocity at the outside edge, whirlpools in fluids do so at their center. The outer ring of a whirlpool revolves slowly, the center attempts an infinite rate of speed. In the physical realm this goal cannot, of course, be perfectly achieved. Earthly, statically conceived space turns, at the whirlpool's center, into a *dynamic-suctional* hollow emptiness, empty of fluid and drawing in air from round about. Suctional forces were described above as having an essential relationship to the etheric formative forces. Rotating movements of this kind are also to be found in the orbits of the stars, expressed externally-mathematically in Kepler's laws: the closer the approach to the center of the planetary system the swifter the rotation, whereas it decreases with the degree of distance from the center. To apply the law of movement inherent in the ideal vortex to the universe would mean arriving at the conception of a kind of force-field rotating with a suctional center as its mid-point, infinitely dynamic and of an intensity decreasing toward the periphery. Rudolf Steiner's spiritual-scientific investigations indicate that the center of the planetary system is indeed under the dominion of suctional forces.

* We will not go into greater detail here on the subject of this "velocity build-up." They will be found in the technical literature listed in the bibliography.

Whirlpools have still another unique characteristic which relates them as microcosms to the macrocosmic system of fixed stars. When a small floating object such as a cork has a pointer attached to it and is then launched into a vortex, it is carried along on its whirling journey with the pointer always oriented toward the same infinitely distant point: a fixed star, as a result of the variations in velocity described above. No matter how many fixed pointer-orientations are involved, each single one always keeps on pointing in the same, original direction. Every point in a rotating fluid structure thus keeps itself oriented toward its particular fixed star as the vortex whirls, hung as though by an invisible thread in a network of relationships beginning at the cosmic periphery and raying in the direction of the vortex. On a planetary scale, the earth itself may be looked upon as such a floating object whose pointer, the earth's axis, always points to the same fixed star: the Pole Star, and remains parallel to itself as the earth moves on its orbit. We have no desire to ascribe to such physical lawfulnesses in the movements of fluids anything beyond what they themselves tell us, and we include them here simply as a detail in the total picture we are painting of the earth-water (life)-cosmos aspect.

The above-mentioned properties of water as a medium supply an answer of sorts to the question as to whether the fluid potentizing medium plays a mediating role between the ponderable substance it takes up and the universal forces of the cosmos to which it is related similar to that played by the life-processes as they mediate between earth and cosmos. Water's relatedness to the earthly realm as well as to the world of instreaming formative forces and the structuring of the universe together with its role as the very element of life certainly show it to be a sort of cosmic-planetary basis for the potentizing process. These facts speak all the more clearly when we consider the little-noted way *moving* water behaves, in addition to the general physical characteristics described by

Henderson. We will see that a survey of these processes opens new perspectives on the nature of potentization.

An internal differentiation which might be called "motion structure" already shows up in very slowly moving fluids. The flow along the banks of a water-course or bordering the walls of narrow pipes is slower than in the middle of a current. This is attributed to friction. Thus an increase in velocity is noted between the edges and the middle of a stream. Put another way, we might speak of a kind of straight-flowing vortex in the above-described sense, with an increase of speed toward the middle. An internal differentiation in velocity of this kind brings about a sliding-past and pushing-by in a cross-section of the stream in the sense of the afore-mentioned hurrying-ahead of those of its sections whose course lies closer to the middle. There must be an inconceivable development of fluid layers sliding by one another in such a stream of flowing water, layers comparable in thickness to soap-bubble laminae which, in their dense proximity, make the water as it flows along look like a compact mass. Currents of this kind are therefore called laminary (from "lamina," a layer). We will pay special attention, later on, to the resulting internal surface area, which in a single cubic centimeter of a flowing liquid far exceeds the inner surface area of a thick book. Up to a certain degree of speed this laminary slipping-by one another of layers continues. But beyond that point a very slight increase in velocity brings about a fundamental change within this internal layer-structure, showing up in the formation of whirling areas, of vortices. Then the stream of moving water is filled with whirlings. This starts at first along the banks or margins where, as experience shows, the greatest differences are found in the movement of the layers slipping past one another; then the rotation spreads rapidly to the middle sections close to the axis of the current. Clearly discernible cross-currents add themselves to the predominating lengthwise motion of the layers. Vortices appear everywhere within the general streaming,

revealing in their suctional centers the suctional forces that must be pictured as having been previously internally active inside the current. Every swimmer is familiar with the strong pull that suctional forces in vortices can exert when they occur, for instance, at the point where two streams converge (cf. Figure 6) or in water passing through a gorge. They are even capable of swallowing up good-sized ships when they occur in the ocean.

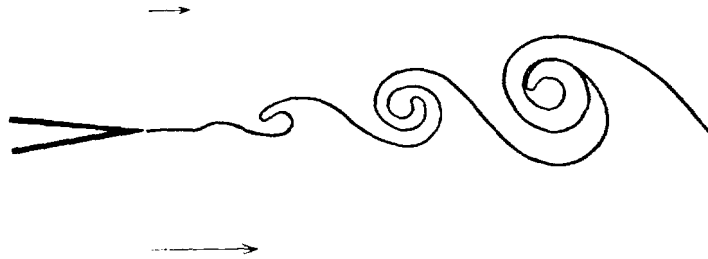


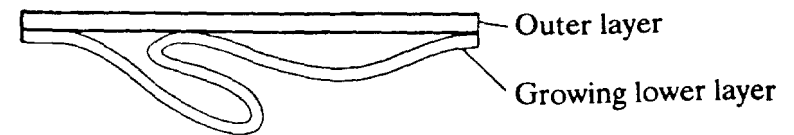
Fig. 6

Exact observation shows the rotational motion in fluids (and in air as well) to be connected with the appearance and conflict of quite definite forces. On the one hand, flowing water belongs in the category of measurable earthly substances, and is as such governed by forces of inertia related to mass. On the other hand, another force "wakes up" at even the slightest motion, a force which then seizes hold of the entire inner area of the fluid and shows up in activity in the surface layers. This is the viscosity of the medium. It is a force which makes its appearance simultaneously with the coming into being of large internal surfaces, and may indeed be looked upon as giving rise to these layers. This force can be considered the measure of the innermost "structure" of fluids, and is put to wide use in technology as one standard of measurement for a great variety of fluids (compare the viscosity of water, oils, glycerine and honey, for example). It acts on the often gigantic internal surfaces of fluids in motion. Rudolf Steiner spoke in another

connection of the rotating, shearing, shifting types of movement as cosmos-related; they work on surfaces. Thus, two realms of forces may be said to oppose one another in the moving fluid medium: the massive-inert terrestrial versus the cosmos-related peripherally active viscous forces. The effect of their interaction in fluids is visible in the forming of layers and vortices.

Where two such polar opposite forces meet we must expect another process to result, and that is rhythm. In the watery medium we see rhythm's very archetype made visible. The forming of vortices when water flows past obstructions at the confluence of two rivers occurs in law-abiding rhythms that can be expressed in numerical terms (Figure 6). And beyond this, a formative principle is manifested here whose true germinal or starting point must be sought in those enormously extended surfaces which are indwelt by the forces of viscosity. These extended surfaces substitute, so to speak, for the cosmic periphery. It is an obvious fact that all shaping of form starts with an establishing of demarcating borders by surfaces. That *special surfaces* can be singled out as exceptional manifestations in the fluid element is ascribable to the presence of forces of viscosity. They take effect where differences in velocity occur in mobile media, or bring them about.

But in the organic realm form is always found to come about as the result of differentiations in the speed of growth—and these in viscous fluid media. It finds its prototype and reflection in the streaming fluid medium. One example among possible instances is a certain stage of wing-formation in insects, shown below:



We find an actively growing layer beneath a more fixed outer one. Since both its ends are, so to speak, anchored, it has to curl back into the inside of the body and thus becomes isolated in its development as an organ. When it is fully formed it is extruded and makes its appearance as a limb, in this case as a wing. Compare this form with that of a train of vortices. The forms of many animals and of single organs can easily be traced back to the form-principle of the involuted vortex. It must suffice us here to have indicated the role played by viscosity as a property of the fluid state closely related to the form-building process and thus to have pointed out a further link of the watery element to the organic. Speaking of plant formation, Rudolf Steiner referred to that delicate, viscous, active cambium layer as the surface that provides the point of contact for the formative forces of a given plant species as they ray in from the cosmic periphery. Many membranes and singular layers show themselves sensitive in this way to the formative impulses of the universe. Numerous phenomena in the realm of flow-physics give strong support to this conception.

Singular layers of this kind can be experimentally produced (the phenomenon to be described is induced more easily in air than in water in certain flow-physics situations). It can be achieved by letting a thin layer of gas or air stream out of a narrow slit in the end of a pipe. When the critical point in the speed of the stream is reached, the lamella appears all of a sudden in the turbulence awhirl with vortices. But if the current of air is held just barely below that rate of speed, as can easily happen when the pressure of the gas or air is correspondingly adjusted, it brings about an amazing phenomenon, becoming responsive to minutest rhythmical stimuli from its surroundings. If a distant bird twitters or somebody whose breath-stream cannot possibly span the distance sings, the current of air takes on inner shape; its materiality is cast, as it were, into certain patterns. The melody of the sounds imprints itself like a seal on the moving stuff of the air. Paul

Eugen Schiller and others have investigated the behavior of these air-streams and the law-abiding form-creation involved with respect to the volume, pitch and timbre of such sounds.²⁸ Indeed, Tyndall found that the sensitivity to tone of such layers in water almost equals that of the human ear. If we think over the fact that man's inner ear is a vortex that has become a bodily organ we can speak in more than a merely metaphorical sense of the sensitive layers in fluids responding like extremely finely organized sense-organs to very delicate rhythmical stimuli. Here again, water supplies a positive answer to our question whether it is "fitted" to absorb shaping forces, in fact, structuring ideas, and to allow them, no matter how fleetingly, to become visible.

The dynamics of water has been discussed from the aspect of its material properties and its responsiveness to form-imprinting forces in the living realm. An aspect already touched upon remains: its response to all things rhythmical. Since the potentizing procedure will be examined as one that begins on the material level and then goes on through rhythmical processes to an involvement with spirit-like forces, we will close our study of preliminary questions with the following consideration of the rhythmical nature of the diluting medium, and try to see whether the picture of the medium in its own nature that we have thus far developed accords, in the final analysis, with the actual picture of the entire potentizing procedure.

There is a well-known poem by Goethe, written about a visit to the Staubbach waterfall in the Swiss Alps, in which he describes the rhythmical play of the watery element: how it plunges down the cliff-face with a soft rushing sound and hurries along its course through the valley toward the nearby lake, wherein the starry world holds converse with it, wherein the vault of heaven is reflected, where it unites itself with the atmosphere and its offspring winds. Water's cyclical course as an archetypal rhythm of the life of the earth and of the soul

of man is pictured here in a manner drawn from the element itself. Rising and falling, as though lifting to the skies what it has experienced in its contact with the earth, sharing the sky with the earth in its descent, it carries out the full swing of the pendulum between the two and sets out ever freshly on its rhythmical cycle through the basic states of everything material: the solid, the liquid, the vaporous. Yoked though it is to the year's course as it affects these material conditions—freezing to ice and snow in wintertime, rising up in summer into the sunlit and warmth-suffused air—it weaves the seasonal rhythms once again, in shorter cycles, into the life-fabric of the earth. Ascending in the form of vapor, it condenses into water-bearing clouds, or climbs into higher layers of the atmosphere, there to freeze into ice crystals in the delicate veils and banners of high feathery clouds. But it is particularly in the fluid state that it brings its rhythmical nature once again to expression, and when it is kept from doing that, its very life is extinguished.

Devoted though water is to the planet earth and its life-rhythms, it nevertheless reflects and repeats the rhythms of the cosmos. It evidences its ability to imitate these rhythms in the changing play of the tides. But when the winds play upon its surface, smaller rhythms superimpose themselves upon the larger, and end up on the shore in rhythmic wave-play. Like rhythmical waves etched in earth's solid element, water makes its appearance again in the alternating swing of meanders in the course of streams and rivers, where it chooses the least destructive and most life-supporting path. If man deprives it of this rhythm by straightening river courses, water gives a *sudden* demonstration in destructive flooding of its lower reaches of what it would otherwise have put to use, rhythmically distributed over a period of time, of its positive, life-furthering power. It would be discovered to be pulsed through by smaller rhythms if attention were paid to the internal movements within a river's course. But something of the ever-changing

rhythmical play of water can be recognized when we look upon the rhythmically forming, circling vortices which, like separate "low-pressure" structures, arrange themselves in trains in the midst of the streaming medium; they repeat in miniature the large-scale life of the earth-planet's atmosphere, wherein low-pressure vortices wander over the earth in similar rhythmically patterned "trains." It forms drops, flows and pulses rhythmically; it is absorbed as the rhythmic element into the circulatory pathways of the organism—the true heart of everything that lives.

V

Processes in the Medium as it Undergoes Rhythmical Shaking

It will be apparent from the foregoing that fluids have an inherent inclination to the rhythmical element. Put another way, rhythm is their life. As substances of this kind they also prove themselves ideally adapted to all life-processes, which invariably run their course in rhythmical patterns, and they are equally adapted on the other hand to the rhythmical procedure involved in potentizing: all their properties meet here in one meaningful *whole*. Each single aspect sounds its own particular "theme" in the total composition of a rhythmical work. The medium undergoing potentization shows itself permeated by rhythms of the greatest imaginable variety. At first it is the flask's back and forth movement as a whole that claims attention. But a gentle splashing, ringing sound is heard in addition, conveying to the ear a rhythmical internal disruption of the flask's contents. At one moment the flask's fluid contents are observed separated from the air it also contains, while at the next both elements completely interpenetrate one another. This thorough mixing of the two elements conditions the mass of the medium to form large surfaces; the profusion of bubbles creates surfaces of contact between the two. The next instant all this has disappeared, only to repeat the process immediately. A delicate play in which surface tensions are formed and released must take place in the medium as bubbles form and collapse. What we see here is a kind of lung with a rhythmical inhaling and expelling of breath, with bubbles appearing and disappearing. Every person who performs a potentization and uses his hands to set this rhythm going will always have the experience of finding himself adjusting it harmoniously to the rhythm of his own pulse and breathing, thus building an invisible bridge to the great world of the starry

universe which, as we have shown above, has built its rhythms into human beings.

But now an intense permeation of the medium by vortices can be noted during the shaking, in addition to the bubble-forming process. Before each shaking impact took effect, the medium was seen to be a cohesive, comparatively motionless mass. Now it has to pass through the point characterized above as that of "critical velocity" in order to enter the state of turbulence. But this is also to say that during every such impact the realm of what has been called a certain sensitivity is traversed. When the chaotization has been accomplished, the fluid mass returns at once to an undivided, unified condition, thus crossing that boundary of delicate sensitivity a second time. A rhythm of opening up and closing in again, a moving backward and forward over a sensitive threshold is thus to be experienced here, an alternating between "awakening" and "falling asleep" again on the part of peripherally active forces of viscosity and the laws of earthly mass, connected with floating and sinking (cf. particularly A. Leroi's *Rhythmische Prozesse*).²⁹ Looked at from outside, there is a suffusion of the fluid with whirling vortices, followed by a coming to rest in the entirety of the fluid mass, a sliding past one another of a great variety of fluid components, a more complex process than is apparent to mere observation.

In preceding pages the vortex-forming movements were characterized as reflections of cosmic motion processes. One is justified in viewing the chaos of the phases of vortex development as called forth by the cosmos, in seeing the activity of terrestrial, cohering forces of mass in every return to the resting state. The alternation between the two shows itself at the same time to be a pendulum swing between forces of suction and of pressure, between what is of the earth and what represents cosmic universal forces.

The potentizing process is likewise rhythmical, a weaving back and forth between earth and universe in which both are

interwoven across the "seam" of "the sensitive condition" along the delicate separation-surfaces of the lamellae and are "sewn together."

It is just these extensive internal surfaces which predispose to the subtle sensibility of the medium described by the English physicist John Tyndall as almost as sensitive as the human hearing organism. A fluid rendered receptive by the rhythmical potentizing process thus reveals itself to be a kind of sense organ too, if the phenomena are allowed to speak for themselves, a medium permeated by a process of "hearing formation." Should it not also be capable of listening to the sounding of the cosmic spheres?

In order to arrive at an approximate concept of the opening up (the development of surfaces) of the medium during the shaking process, let us return for a moment to a contemplation of the vortex. The circumferential speed of the individual layers slipping past one another increases toward the center as described. If we take the thickness of a soap-bubble lamella as our standard of measurement for these layers we would arrive at an area of several hundred square meters of internal surface for a vortex of one cubic centimeter (the internal surface of an 800-page lexicon measures about thirty-two square meters by contrast). The subtle sensitivity described is an attribute of every one of these layers, as of a place where earth and cosmos meet. Just as life can only take up its formative impulses from the development of corresponding extensive interior surfaces, are these latter not equally the *sine qua non* for joining the medium to the cosmos? One is naturally prompted to ask whether that characteristic sensitivity to the imponderable realm of universal forces could not somehow be brought to experimental demonstration.

Before proceeding to answer this question, let us resort to a simple geometrical-mathematical diagram to illustrate what has just been described:

Inversion on the circle

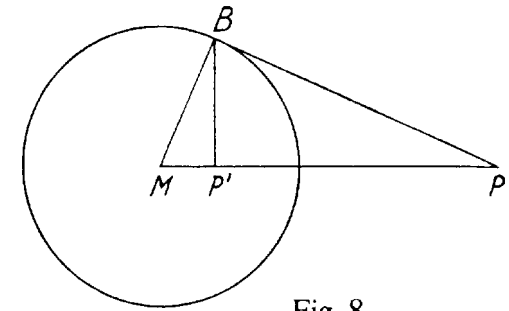


Fig. 8

A point P outside the circle is connected with a point P' inside the circle by the following construction: A tangent, PB , is drawn from P to the circle at B , and a perpendicular is dropped from the tangential point B to the line PM , which connects P with the center of the circle. P' is the coordinate of P . It is easy to see that the further P is located from the circle, the closer a coordinate draws to its center (it is recommended that several alternate lines re-locating P be sketched free-hand). In the ultimate case, moving P ever further from the circle until it is located in infinity, P' moves ever closer to M . Every infinitely distant point around the whole circumference of a circle has its coordinate in the center. In other words, *one* single point, the center of the circle, is the coordinate for the entire periphery. If, on the other hand, P moves toward the circle from a distance, P' moves correspondingly closer to P . In the ultimate case, both P and P' reach the circumference of the circle and coincide. Thus the point of contact between what comes streaming in from infinity and what comes from the earth's center can be envisioned as lying all along the boundary of the circle. In relation to potentization, if one conceives the walls of the flask used as the boundary of such a circle, earth and cosmos meet there; but not only there. They enter into a communication at the boundary of every circle or

surface of the infinite number of rotating layers of vortex formations or of the entire whirling fluid content of the flask. The cosmos stamps what the earth brings toward it. This corresponds in a way to the imprinting on sensitive currents of air or flame of words or tones emanating from musical instruments.

VI Experimental Findings

Weighing matters such as the above and contemplating the material and dynamic properties of water, one is prompted to ask the following question: is it possible to show experimentally that the potentizing medium is responsive to the imponderable action of formative forces when surfaces are created in it?

We began in 1947 to do preliminary experiments to determine whether water subjected to rhythmical shaking at different times of day would show consequent qualitative differences or remain the same. Since from the observer's standpoint the vault of the heavens moves in a rotation that keeps bringing new constellations and planets over the horizon, it seemed to make sense to put the cosmic "agents" to the test.

The set-up of experiments was as follows: A series of identical glass flasks were filled two-thirds of the way up with distilled water* at a certain hour on the day preceding the experiment. At 7 o'clock on the day of the experiment the first, appropriately marked flask was picked up and rhythmically hand-shaken for a 4-minute period, then returned to its place in the series. Two hours later, at 9 o'clock, the second flask was shaken, the third 2 hours after that, and so on, over a 24-hour period. The samples of water so obtained were then used as a germinating medium for approximately 50 wheat seeds each. Upon reaching a height of about 10 centimeters the sprouts were measured by two individuals and the average length for the different "water-types" was calculated. The results were then marked on a graph on which the horizontal axis indicated the hour, the vertical axis the average lengths

* Experimental findings made with non-neutral, specifically pre-dyed media will be published in a later report.

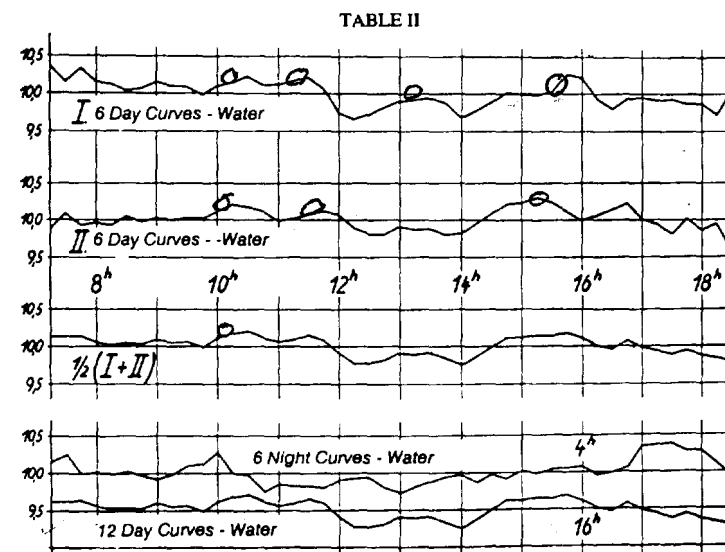
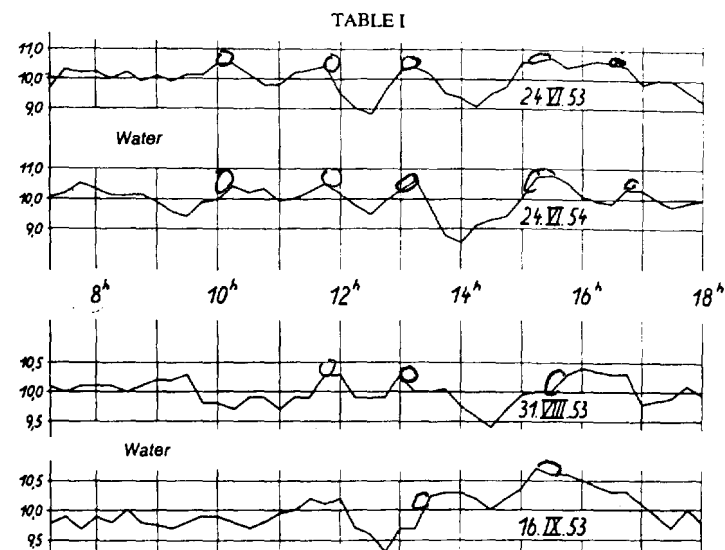
of the wheat sprouts. The first experiment already showed differentiations in growth in the individual tests [as compared with the unshaken water controls], and when these were entered on the graph a definite time-pattern was discernible. The curve did not show growth almost identical to that in the unshaken water-controls such as might perhaps have been expected. This particular curve maintained its characteristic pattern with minor interruptions for the 7 years following. In the course of the seasons, however, single curves showed a certain slight variability, but in a larger sampling this balanced out and could be eliminated, the basic curve showing up clearly.

The results shown in the tables were derived later from a somewhat modified procedure. A larger number of wheat seeds were brought to germination in the above-described types of waters contained in glazed porcelain dishes. About two days later 30 sprouts of similar appearance were selected and planted in ordinary unchlorinated water. (We point out that only biodynamically raised seed-stock was used in these experiments, since this had proven itself the best quality for testing.) The further experimental sequence was as described above, except that the intervals between successive shakings were reduced to 15 minutes. The average value of length or weight of all the sprouts in each series of experiments was chosen as the reference line. This line was assigned the value of 10, and the individual values measured were adjusted accordingly.

The 4 curves in Table I show the results for one day. Experiments run at the same times but in different years produce quite consistent curves on the whole. We cite as examples the curves for the period from 8 a.m. to 6 p.m. on St. John's Day, the 24th of June, 1953 and 1954. Their characteristic rhythms show a clear resemblance. Two less markedly oscillating curves plotted for that reason on an exaggerated scale illustrate the variation between different days. When these are more closely studied, they too are seen to exemplify the curve-type,

OPTIMUM 10-10:15 AM
 11:30-11:45 1 PM 1:15 PM
 3:15 3:40
 4:15 to 4:30

which shows up more clearly still when many single curves are averaged.



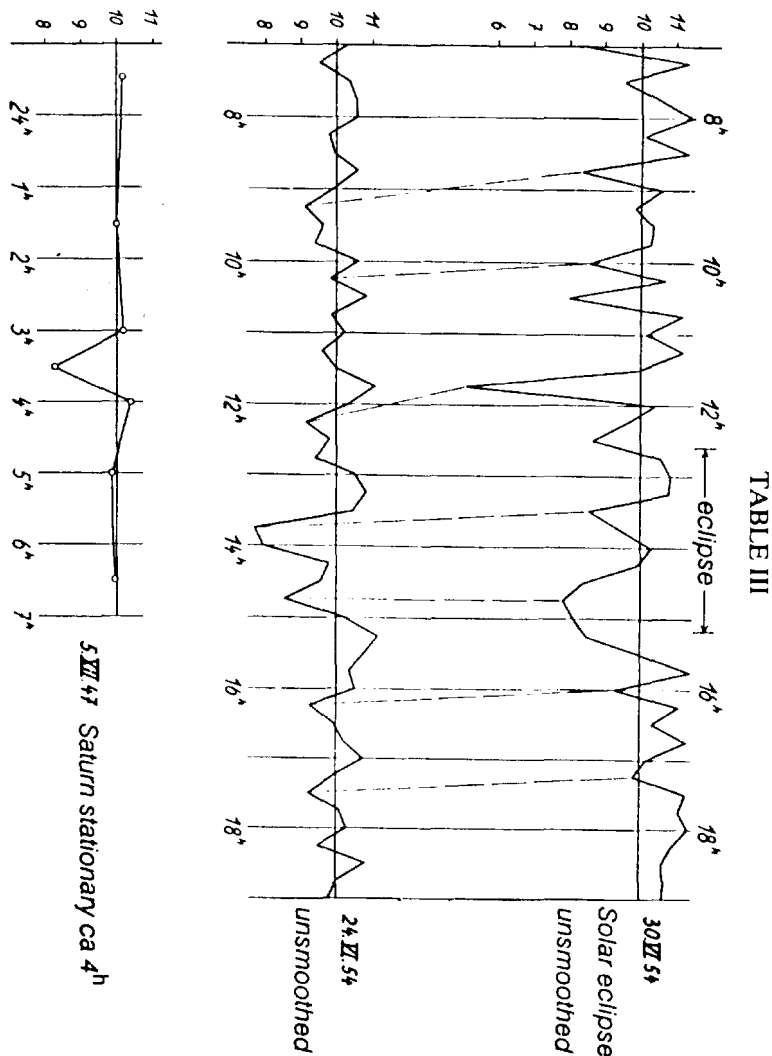


TABLE III

In order to bring out the characteristic course with the necessary degree of clarity, a simple widely-used procedure of smoothing the curve was adopted, averaging 3 adjacent values and plotting the position of the middle one. Table II shows the type that results from averaging 12 single curves (the third curve from the top). One section of the available test-material was divided into 2 equal parts, and 6 curves were averaged in each. They are numbered I and II in the Table. The type can obviously show up more clearly the greater the number of single curves averaged. But it is already plain in the case of the 2 upper curves in Table II that they closely resemble the average of 12 single curves and that each of them results in the characteristic course. The lower section of Table II repeats the result of averaging the same 12 daytime curves, together with the type of curve derived during night testing.

But these findings do not as yet decide the question as to whether water is responsive to the surrounding cosmos. Do these curves reflect differentiations in cosmic-universal forces streaming in during the day, or possibly with the daily rhythmic organization of the etheric body of the earth itself, which, as "the great unknown agent," is responsible for so many biological and physical-chemical daily rhythms? G. Wachsmuth gave a comprehensive description of such rhythms as an expression of the earth's supersensibly active body of forces; a study of his work is recommended for the light it casts upon this question.^{30,31}

The same experiments were carried out in further research on selected days such as those on which special astronomical conditions prevailed. It became clear as we did this how important it was to be familiar with the normal curve in order to be able to recognize as real effects any marked deviations from it that occurred as the constellations changed. (This curve was firmly established as the result of far more comprehensive ex-

* Line 10 shows the reference line for the night-curve. The reference line for the daytime curve is the same as in line 9,5.

perimentation than we have described here.) Though a well-nigh illimitable research program lies ahead before our question can be fully answered, we can already state that the oscillations of the normal curve are increased when certain characteristic constellations occur, especially in the case of stationary positions and conjunctions of individual planets; and there can be shifts of the curve as a whole, or local extensions and contractions can make their appearance. We ascertained in most cases that the "constellation curve" resembled the normal curve in its general course; so, for example, a minimum existing in the daily curve near the time when the constellation occurs will be more marked. The earthly element, water, is affected in this way by events taking place in the heavens. We cite a telling example in the results of a shaking experiment made with water during the solar eclipse of June 30, 1954 (cf. Table III). We contrast here the unsmoothed curves of June 24 and June 30; the oblique lines connect related points. A much stronger oscillation in the curve on the day of the solar eclipse and an extreme minimum occurring before it are unmistakable. Other eclipses from 1947 on produced corresponding results.

Anyone who has an opportunity to do much work with curves of this kind arrives at the concept of a concrete *time-structure* that, far from having any relationship to the quantitative monotonous movement of a clock, shows itself possessed of inner qualities: concentratings, expansions and contractions at various points in the stream of time. Although this structure is obviously regulated by the earth's relationship to the sun and moon, it is modified by the "speech" inherent in the stars' courses. A time-organism can be envisioned as similar to that of a plant which, in its rhythmically repeated expansions and contractions, imitates cosmic processes, as described above. Rhythmically recurring planetary loops, pauses, decelerations and accelerations, whose waves make themselves felt in earthly happenings, in the element of moving water,

are to be found built into time's rhythms; they speak, as it were, like the cosmic Word into this substance as into a sensitive and receptive sense-organ.

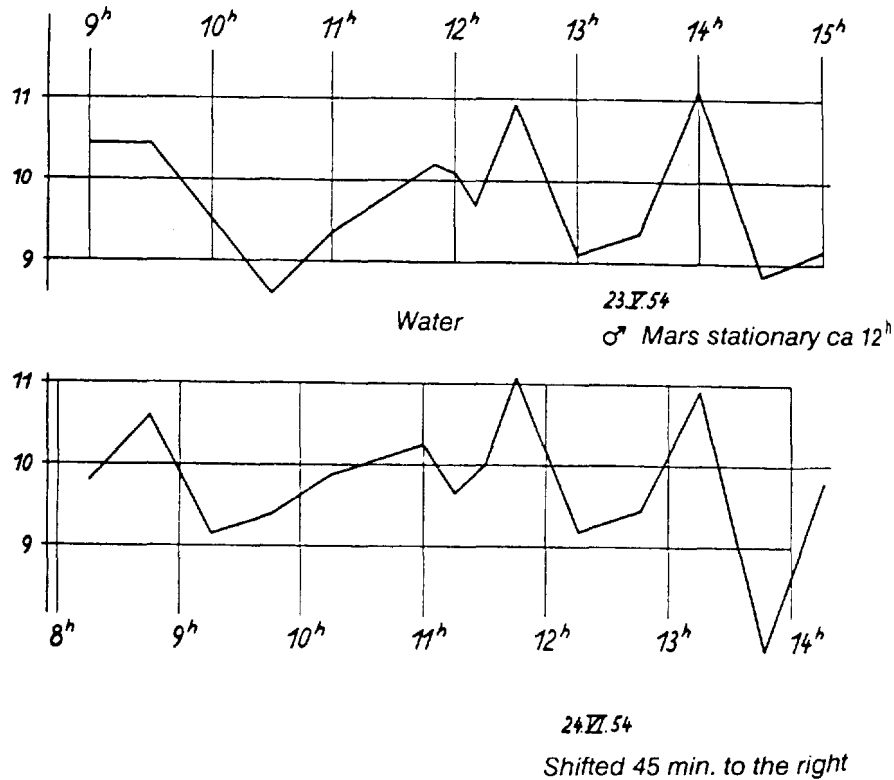
It should not surprise us that it is just the plant, embedded as it too is with its growth-rhythm in that same time-structure and receiving its formative growth-impulses from that same source, which represents *the suitable reagent* for bringing to visibility the activities taken up by water. When water samples several months old were used on these sensitive reagents they proved still effective. It is feasible to store imponderable properties therein and to produce them from that source again at will.

We believe that we have supplied herewith the first confirming answer to the question about the role played by the medium between earth and heaven, although much experimental work certainly remains to be done. Just as in the creation of matter *life* takes up cosmic forces from above and releases substances downward, so, in potentizing, it is the medium, water, that takes up the connection with the cosmos but devotes itself on the other hand to the earth. Flowing over the earth in streams and rivers, it opens itself to the cosmos, takes up the universal forces raying in, and mediates them to the earth and all its creatures.

We show in Table III the result of an experiment made in 1947 during a pause in the movement of Saturn. At the beginning or end of a loop a planet's motion turns in the opposite direction. In this change of direction the planet seems to be standing still among the fixed stars for a certain short period. In the case of the experiment referred to, the various shakings were carried out during the period of just such a reversal. It seems to us that, next to the deepening of the curve that occurred at the time of the pause, the most important thing was that the usual rising tendency of the night-curve between 3 and 4 a.m. (cf. Table II) is interrupted at this place. We observed repeatedly that the marked morning maximum of the

day-curve between 5 and 6 a.m. was either weakened or else entirely missing, due to the occurrence of a characteristic planetary constellation at that time.

TABLE IV



We present, in Table IV, as an example of the shifting of a curve, the result of an experiment made during a pause in the movement of Mars on May 23, 1954. The various shakings here were not carried out at 15-minute intervals; therefore only the time-periods corresponding to the constellational curve for June 24, 1954 were linked for purposes of comparison. The two curves resemble one another, but there is a timewise difference of 45 minutes between them. We should not fail to mention that while in a number of cases of a Mars pause analogous shiftings were observed, this is by no means true of this planet alone.

We are now far enough along in our presentation to turn our attention to the role played by the substance to be potentized. This has hitherto been the matter of first concern in almost all treatises on the potentization problem, to the neglect of the role of the medium and of the processes that take place within it. But it becomes ever clearer that the potentization problem is not merely one of the substances used; it is, rather, necessarily bound up with the question of the directing forces, which cannot be approached from the energy standpoint.

VII The Potentized Substance

In a previous chapter we followed the evolution of the world of inorganic matter to the stage of its final densifying as the result of a succession of incarnations of the earth-planet, tracing too the life-phases which, in their rhythms, always pulse in harmony with the cosmos. We saw in the life-processes the mediating element between universe and earth to which the mobile water element serving to relate earth to universe in the potentizing process corresponds. Water is, so to speak, the neutral soil which, upon being turned over by the plough in the rhythmical process of potentizing, is opened up and made receptive to what is taking place in the starry heavens above. Then the particular seed is planted that will use and imprint the soil in conformity with its own body of etheric formative forces. We have described how every plant species seeks out quite specific cosmic rhythms from among the many rhythms of the courses of the stars, shortens their timing, and condenses them into visible earthly form and materiality.

All substances, including the inorganic, must be looked upon in the sense described above as expressions of specific complexes of formative forces which enable us to recognize them as related to quite definite cosmic forces, or, in other words, to the joint activity of specific stellar forces. This justifies our comparing substances to seeds, which, planted in the potentizing medium rendered receptive to the cosmos, take on a relationship to quite specific starry forces, subordinate the "soil" to their use with starry help, and imprint it with quite specific *force-configurations*. The potentizing medium that has been rendered receptive to the whole cosmos is now related through the addition of a substance to a selected cosmic direction. The medium itself is universalized as a cosmic agent, so to speak. But when, for example, iron salts are added, it is immediately brought into contact with those universal forces to

which iron owes its origin. These penetrate into a medium now rendered receptive to them. Pictorially speaking, a tiny Mars ship sails over the universal waters of the sky, leaving upon it the wake of its orbital rhythms, its loops, its retardations and accelerations.

Admittedly, no crude physical or chemical methods suffice to determine changes in the shaken medium, anymore than we can discern in a person just coming out of a concert how the music has transformed him, and how its harmonies resonated through his being. He still appears to our physical eyes as our familiar colleague, Mister X, though the music enables him to return to everyday life with a new capacity to shape it and exert a harmonizing effect upon his surroundings. We have Rudolf Steiner to thank for pointing out that the substance dissolved in the fluid medium develops a connection with the stellar universe, a fact experimentally demonstrated some decades ago in L. Kolisko's sensitive capillary-dynamic research and published in the series, *Workings of the Stars in Earthly Substances*.³² Numerous other investigations done by myself using Kolisko's method have established its reliability. One such illustrated published series is contained in W. Pelikan's *Secrets of Metals*.²² In this book L. Kolisko's experimental demonstrations of the relationship of the various metals to the planets are fully reported and discussed. We take this opportunity to refer readers to it.

We may therefore say that what is thus carried from one stage to another in the potentizing medium is to be recognized as forces, as forces, more precisely, which imprint themselves on the medium in a way analogous to that in which the capacity of plant seeds to produce a particular form is passed on from generation to generation.* No one contemplating the sequence of plant generations would conceivably get the idea

* Dr. Steiner described in a lecture given on March 31, 1920 how the medium takes on a "different configuration" in the potentizing process.

that a plant's capacity to reproduce itself would lapse after 23 generations, even though not a single "atom" of the original seed-embryo is to be found in the seed produced that many generations later. The stereotyped concept of atomic limits in the Avogadro number can obviously not grasp the effectiveness of high potencies. The Avogadro number is indeed a threshold, but one that human insight will have to cross. We emphasize particularly at this point that we see the chief goal of potentization research as lying, not in a proof of the effectiveness of high potencies, but in the development of concepts adequate to this realm of pragmatic facts.

We should include in our presentation a brief discussion of the frequently employed medium, milk-sugar. Does what has been said about fluid media as represented by water apply here too? It can indeed be demonstrated that the essential effects of the potentizing process carried out with fluids result from triturations done with milk-sugar also; there is a thorough mixing and contact of all components, a marked development of surfaces and forming of borders quite comparable to those developed in fluid media. The powerful rubbing against each other of such bordering surfaces can lead to processes of exchange and diffusion analogous to those taking place in fluids and bring about structural changes in the medium.³³ There is no question but that a transference of the medicinal forces to the milk-sugar medium takes place and that corresponding changes occur therein. (From the point of view of the physics of flow dynamics the motion-processes in dusts and powders are susceptible, on the basis of potential-theoretical considerations, of exactly the same mathematical treatment as is motion in fluids.) Anyone who has prepared a trituration finds it natural to accelerate the speed of the pestle's rotational movement at the center of the mortar and to slow it at the rim; this fact was confirmed by a number of operators. The behavior here is the same as in the case of rotating fluids. It is significant that in the grinding process too

the added substance "rushes out" into the swirling surface layers, where it meets the selected instreaming universal forces.

There is a viscous state, the melting point, midway between the fluid and solid conditions that illuminates the potentizing process. In the manufacture of high-grade optical glass, achieving maximum purity of the molten material is all important. Light is the chief consideration; the glass material yields place to it, and has to give up any inner differentiations of its own. During the carrying out of the purifying process in rhythmic repetitions, the glass is raised to this high level, on which it can, so to speak, come to a selfless meeting with the instreaming light. The components of the molten glass material are distributed in long, repeated stirrings, throughout a uniform or homogeneous mass; the batch is organized into finest interweaving layers where thorough mixing is gradually achieved. This drawing out and stretching of the viscous molten glass to gossamer-thin membranes is accompanied by osmotic and diffusion processes and a lively play of surface tensions. It signifies a purification of matter by human beings similar to an opening to light such as is brought about by nature only in the case of the most precious gem-stones.

VIII

Experimental Findings Using Potentized Iron-Sulfate

It was a matter of deliberate choice with us to give up testing a variety of substances in favor of devoting a year or so to the investigation of iron-sulfate potency-curves. We wanted to ascertain whether and under what conditions curves of this kind could be reproduced. Only the water experiments had thus far demonstrated that the time of day exerted an influence on the curves. So it remained uncertain whether this might not prove to be the case in obtaining curves for potencies as well. The experimental program was therefore so arranged that potency-curves were obtained not only for the morning hours, but partially also for the afternoon. The shaking of the various potentization stages was timed exactly as in the case of the water experiments described: a potency was run every quarter of an hour, beginning with potency D1 at 7 a.m. and ending with potency D30 at 14:15 o'clock (multiple glass method). The afternoon potencies were run in a corresponding pattern. The initial substance used was a solution of iron-sulfate in a dilution of 1:100, following L. Kolisko in her research. As in the water experiments, wheat seeds were brought to preliminary germination in porcelain bowls containing the potency solutions, and about 2 days later seeds of equal growth were transferred to unchlorinated well water. We devised plexiglass liners³¹ for the bowls; 30 sprouts were set in each in equidistant grooves, similarly oriented, and exposed to identical external light and temperature conditions. Eight days later the sprouts had reached a height at which they could be measured and the average growth had reached a height at which they could be measured and the average growth for the individual bowls ascertained. Again we applied the same 3-stage averaging method used in the case of the water-curves. Here too,

averages of the total sprout-lengths of comparative weights in an experimental series were used as the reference line.

When 28 iron-sulfate curves had been ascertained and evaluated, the immediate impression was one of variation in the single curves. Many differed distinctly from any others, while there were some conspicuously similar in the sense of belonging to an underlying type. One of the latter was then selected for purposes of comparison with all the rest. It was found that 10 of the 28 curves did not conform to any great extent to the "normal" curve. These 10 were put aside for the time being to await further study, but were not entirely lost sight of. Of the 18 remaining curves, 13 were from morning runs, 5 of afternoon origin. We already see, in Table V, that in its overall tendency the curve is not influenced by the time of day. Putting the 2 curves together, we arrive at a new curve which will serve in what follows as the basic type for purposes of comparison.

TABLE V

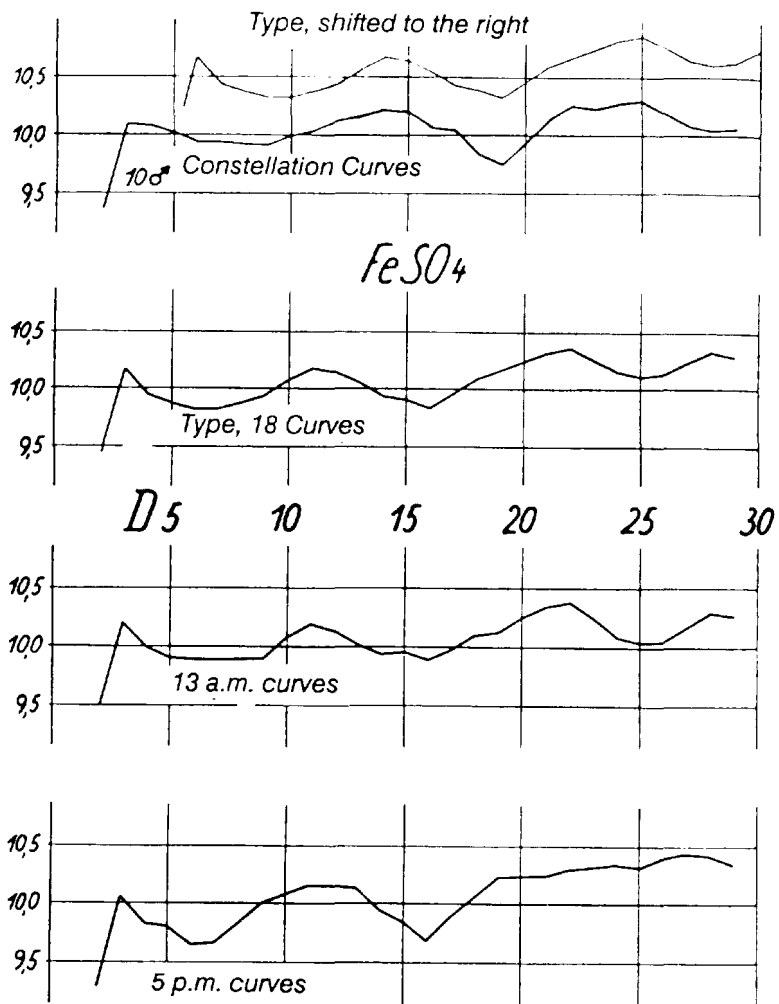


TABLE VI

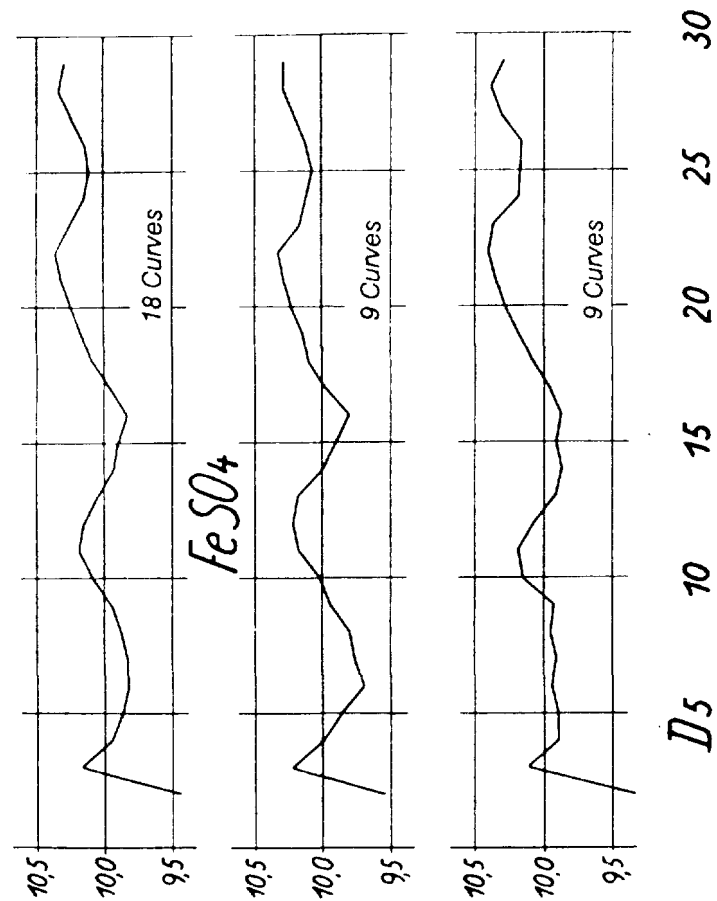


TABLE VII

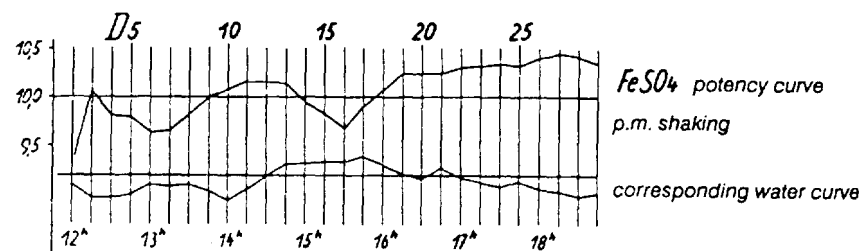
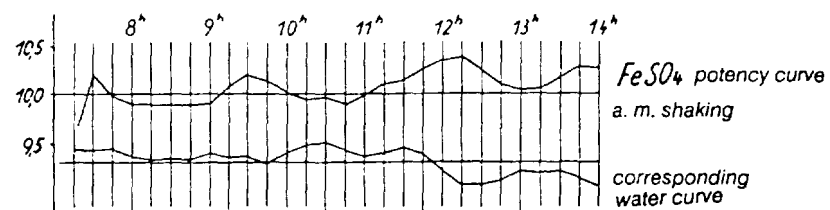
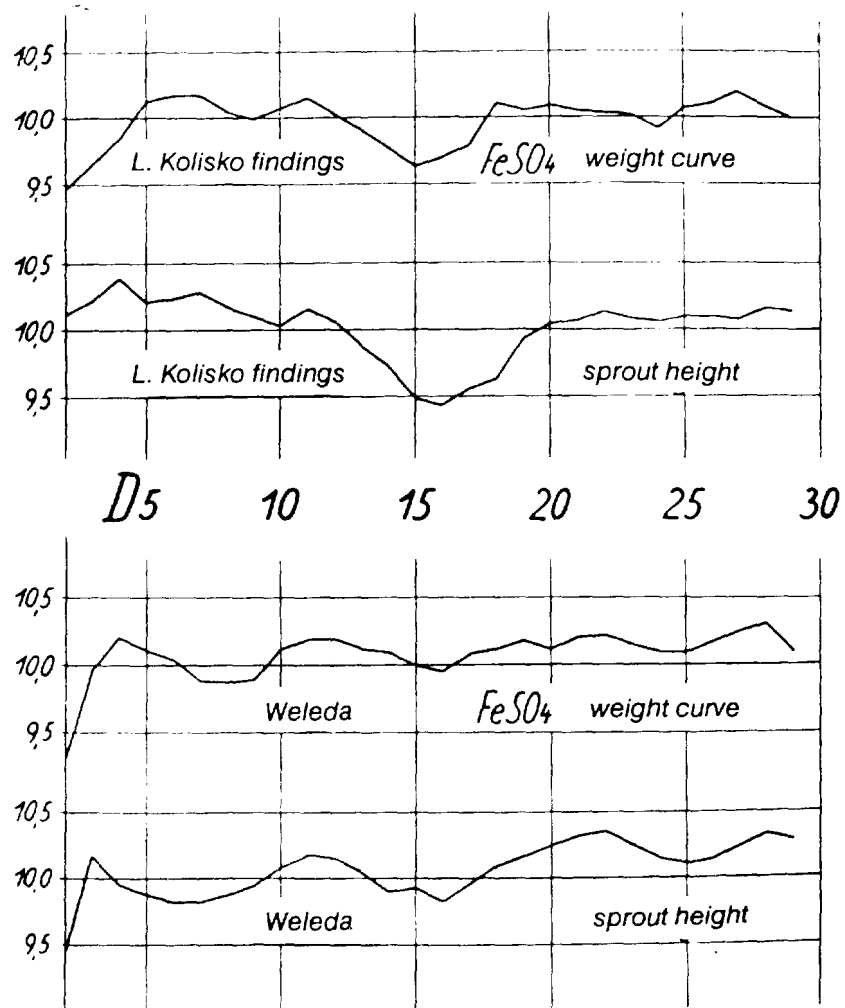
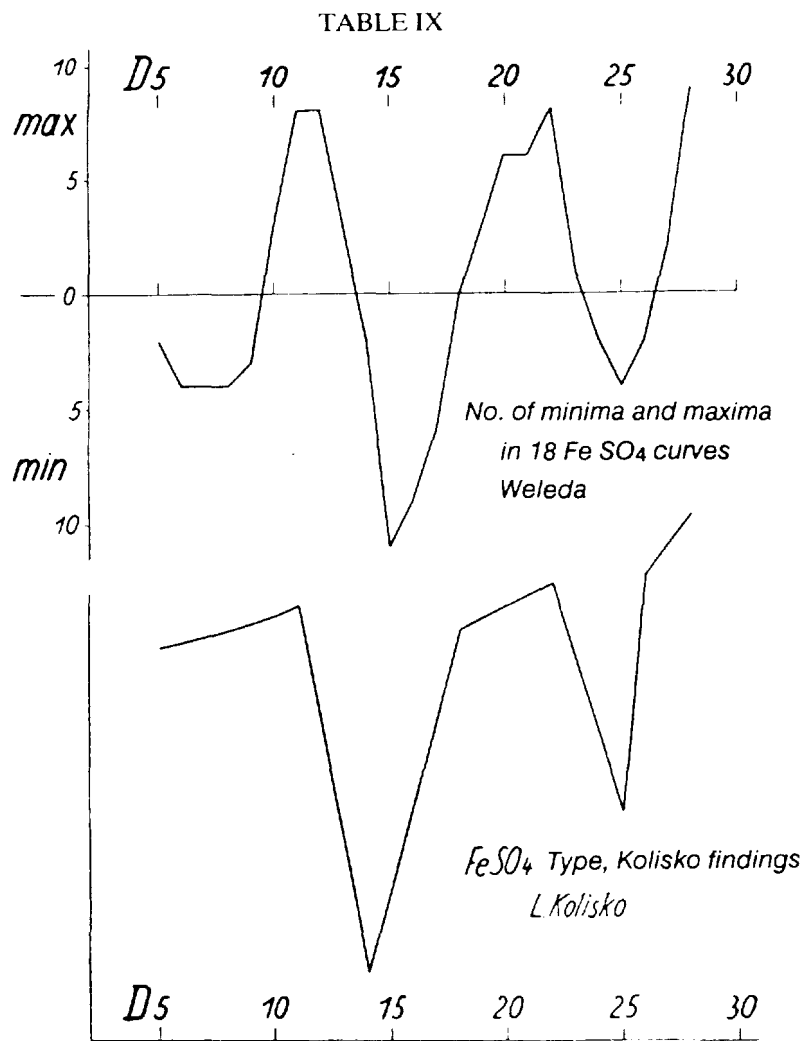


TABLE VIII





And now, what of the 10 potency curves that we laid aside? What accounts for their striking difference?

A study of the time-points—that is, of the days—on which the iron-sulfate potencies were made supplied the answer. They were without exception days when Mars constellations were conspicuous: Mars in conjunction with the moon, and other characteristic positions. The features of all the 10 curves were then combined, with the result that the type with which we had already become familiar was discovered here too. The only difference was that the curve as a whole shifted noticeably in the direction of the lower potencies. Here again, we came upon the same phenomenon of shifting already encountered in the water-curves only, but in this case with a decided orientation to Mars constellations. In Table V, the normal curve made on days without such constellations is shown, where it belongs in the graph, above the “constellation curve,” as we will call it. It is impossible to escape the conclusion that it is not just the medium but the potency too that is affected by what takes place in the environing cosmos, except that the influence in this case is *specific*: that of the activity-sphere of Mars, with which iron is associated.²²

In further research, the 18 potency curves were divided into 2 equal parts in order to test whether the so-called type showed up in both and could therefore be considered a reality. This question could be answered in the affirmative, just as it was in the case of the division into morning and afternoon curves. Table VI again demonstrates basic similarity to the 2 sets of potency curves.

It can be seen in Table VII that the often-expressed opinion that potentization beyond the Avogadro (or Loschmidt) number is nothing more than a shaking of water, really does not fit the case and is disproved by the experimental findings. The summarized types of the potency curves, like those of the water-curves (all of which were deliberately made at the same time) clearly demonstrate the difference between

the potency curves and the water-curves, and this just in the range between D23 and D30, that is to say, well beyond the "atomic boundary line."

We now turn to a comparison of our curves with those reported since 1923 by L. Kolisko. Kolisko measured sprout lengths and weights of 5 series of iron-sulfate potencies and published her findings partly in the form of curves, partly as tables. The potencies were similarly made in both instances, but Kolisko planted the wheat seeds in the ground and watered them with the potencies. This lessened the poisonous effect of the lower potencies. Experience has shown that the variation in growth-heights noticeable in the curves is greater in the case of tests made with soil than it is when made with water, and this has to be taken into account in judging and comparing results.

Table VIII compares weights (root and sprout) and sprout-lengths, and indicates that there is not only a considerable degree of similarity both in Kolisko's weight- and sprout-length curves and in our own compared with hers, but also in comparison of all 4 curves with one another.

Lastly, Table IX shows the placement, determined by the usual statistical procedures, of the maxima and minima of the various potentization stages in the 18 curves discussed here and recorded in Table IX.* When, for example, 1 maximum and 10 distinct minima were found in the 18 curves at the 16th potency (D16) (a qualitative judgment confirmed by repeated testing), the resulting value of 9 minima was recorded in Table IX. The overall tendency of the FeSO_4 potency curve shows up in this way again as a kind of concentrated extract. The lower section of Table IX shows L. Kolisko's curve, drawn to scale. If we weigh the fact that Kolisko's growth experiments were done in soil while ours were carried out in water, we may indeed speak of a striking similarity.

* An article on the application of statistical methodology to potency curves is planned for later publication.

It can be stated in a summarizing of experimental findings that potency curves present characteristic pictures of the substance tested, pictures proven to be reproducible whenever a sufficiently large number of potency curves are combined. This does not cancel out the variations of the single curves; rather do they provide a distinct picture of the essential nature of the tested substance. This holds true both in the case of Kolisko's findings and in those described above; both have been substantiated in all respects, and have proven mutually supportive. This experimentation admittedly demands greater precision than is practiced in most laboratories because it involves the inclusion of cosmic factors. The overall picture presented in these pages confirms the fact, borne out by the experiments themselves, that dissolved substances, particularly when potentized, are fields of action for cosmic processes. When the water medium brings a substance (iron, for example) into connection with the activity of the entire cosmos, then that substance searches out the realm of cosmic-universal forces related to it (Mars, in the case of iron) and imprints them on the neutral medium.

But as our experiments show, a potency curve must also be looked upon as a time-organism into which substances are taken up as though onto a level of existence beyond space. (The shiftings occurring in curves during conjunctions are, in our view, susceptible of no other explanation. Since similar shifts occurred in experiments performed with water only, the shifts in the potency curves cannot be ascribed to purely material effects, but rather to the production of energy in the time-stream obviously dependent on specific cosmic happenings, as in the case of Mars and iron.)

This brings us to a further experimentally demonstrated validation of a statement made by Dr. Rudolf Steiner in reference to L. Kolisko's work: "In the future, when these research-findings are properly evaluated, the laws of nature will no longer be investigated solely by weighing and measuring

techniques, by atomistic methods. Instead, people will be aware that there is rhythm everywhere in matter itself" (author's note: cf. here the rhythm of maxima and minima in the potency curves), "and will therefore understand that cosmic rhythms condition rhythm in all the processes of nature." The realization that nature carries on a continuous potentizing process in flowing water, mineral springs and ocean surf, and that cosmic entities imprint themselves therein, opens up a new perspective on the healing effects these are known to exercise.

The frequent objection that only water in a shaken condition remains in high potencies and that any talk of *specific* effects is unjustified is proven quite mistaken by the experimental findings reported above. The curves for the potencies from D20 to D30 are also of quite a different type than is found in water-curves made at the same time, and this holds as true in the case of the single test as it does in the summaries of a considerable number of experiments. The research findings thus obtained confirm our earlier musing that the important thing about the potency problem is not just the question of ponderable matter, but, above all, the specific activity of forces.

What the Potency Curves Reveal

When we look at experimental findings expressed as curves on a graph the experience we have is not ordinarily comparable to the kind we have when gazing at some impressive natural scene, a colorful landscape, for example. An annual temperature curve is hardly as moving as the immediate experience of a hot summer day, of towering clouds and thunderstorms, or as the chill we feel at the freezing cold of a clear, starry winter night. And we encounter in the potency curves a similar qualitative aspect that challenges us to concern ourselves with these findings in a way different from the merely quantitative. We would therefore like to try at least to bring to view some impression of their hidden features.

An earlier chapter was devoted to giving a short summary of the findings of anthroposophical spiritual science concerning the evolution of the earthly world of matter through a series of planetary incarnation-stages and its descent from the spiritual to the physical plane. We showed how the earth-stage was the outcome of cosmic processes, in the course of which the fluid state and the formative force called chemical ether were developed. Spiritual science reports of man's developmental stage, during the old moon period, that what we know today as his metabolic system was gradually formed over long periods of time. A previous planetary stage, that of the ancient sun, went to the forming of the rhythmic middle system, which occurred simultaneously with the development of the external air and of the formative force known as light ether. Prior to this came the as-yet non-substantial stage of ancient Saturn, during which the nerve-sense organization underwent its first development at the hands of divine-spiritual powers. This is the stage of pure warmth and of the formation of so-called warmth ether. The sense organs, which have now reached their highest peak of development, are therefore the oldest

organ-system; they were increasingly elaborated and perfected in an ongoing series of developmental stages. Whereas the limb-system destined for use under terrestrial conditions only developed in the course of the present stage of the planet earth. The earth's incarnation was thus preceded by three earlier such planetary phases, all of which had to pass through stages of ascent, peaking and decline in their characteristic evolutions, finally entering a cosmic pause, a resting state in which they became invisible.

The cosmic evolutionary process thus proceeded in a stepwise densifying on the one hand, on the other in a freeing of the formative forces named above, with the emergence in a final stage—"the end of God's creation"—of dead inorganic matter.

If we now review the conditions through which a potentized substance passes as it hastens out into the expansion of increasing dilution, we can see in the stepwise rhythmical potentizing process a reversing of those great cosmic steps whereby the densification of terrestrial matter was brought about. First, it is immersed in the watery medium, where it is ever more fully released from its bond with the terrestrial world and wherein, absorbed by the suctional action of the hollow spaces of the vortex that represent the sun-center, it finally disappears as ponderable matter. One might liken this process to the "sheaths" within which it has been enclosed in the course of cosmic evolution being stripped away in a stepwise sequence that lays bare at every "rung" of this spiritual ladder what world-evolution once created and laid down there. As a substance undergoes potentization, forces that have accumulated are removed one by one, beginning with the force of material cohesion, much as a miner digging for coal first clears away layers that have built up above it. The miner not only arrives at a particular place in space when he reaches the coal, but at a geological period as well, one that lies far back in time. We actually take three big steps, the sizes

of which differ somewhat depending on the substance we are potentizing, as the potency curves with their few but pronounced minima are continued up to the 30th dilution. Although we want to avoid being doctrinaire and to keep our minds open to further possibilities of insight, it nevertheless seems to us that the above three steps reflect the stages of cosmic evolution described by spiritual research. There is good reason to assume that what we find in that "layer" of substance between the two chief minima is a kind of reflection of the sun stage; that the area beyond the second great minimum reflects the still immaterial state of ancient Saturn; and that we find reflected in the area before the first minimum the most recent stage: that of the moon-earth evolution. In the following table of correspondences the potentization process is thus seen to be a freeing of the above-described types of ethers, reflecting the evolution of the world and man:

Lower area, before the main minimum	Earth, life ether, moon, chemical ether, metabolic-limb system
Middle area, between the minima	Sun, light ether, rhythmic system
Upper area, past the 2nd main minimum	Saturn, warmth ether, nerve-sense system

It is particularly worthy of note that, in another connection, Rudolf Steiner stressed that in illnesses of the metabolic-limb system chief consideration should be given to using low potencies below the first main minimum; in illnesses of the breathing and circulatory system, to potencies ranging between the main minima; and in illnesses of the nerve-sense system, to potencies above the second minimum. In other words, he re-connects the diseased organ with the forces with which it was

united in the far distant past, but which then had to go another route in order to avoid disturbing that organ's proper development by acting too overwhelmingly upon it. When he was asked about the use of higher potencies, Rudolf Steiner indicated that the 30th potency, D30, represented a certain boundary beyond which a physician would be entering an area to explore which human insight was as yet too limited.

We therefore believe ourselves justified in seeing in potency curves a reflection of planetary incarnation-stages of our earth in the sense that the formative forces of life- and chemical ether are released in the area below the first main minimum; that, after a cosmic pause, represented by that minimum, the realm of the sun's light ether is entered; and that, after a further cosmic pause (the second minimum), we finally reach the realm of warmth ether, a world of forces ever less and less involved with space and time.

Since living organisms are composed of all four types of formative forces it is of course natural to think that organisms constitute particularly sensitive reagents to the activity of these forces. Plants already prove this, but it is even truer of the human organism, which, though it is not the most sensitive of all instruments, is by far the most comprehensive. It is no accident that the discovery of potency effectiveness was made there, and is constantly being experienced and renewed as a result of conscientious observation on the part of many physicians.

A doctor prescribing potentized remedies is actually reaching back to a time in natural and human evolution when both were still one undivided whole. We see herein one of the spiritual scientific corroborations of the validity of the Simile Principle, as well as an explanation of the effectiveness of potentized substances. It is fair to call this a genuine synthesis of the two branches of the healing art, made possible by the research of Rudolf Steiner. A healing method was evolved from Hahnemann's contributions which, while according

them full honor and appreciation, goes beyond them in a healing effort based upon concrete insight into the transcendental background of man and nature.

The *physician* thus combines in his work of healing 1) the right *curative* substance known to have a functional relationship to the diseased human organ and 2) the right degree of dynamization (potency stage). We saw how both of these emerged from an initial supersensible oneness that embraced both man and nature.

The following words, spoken in comment on L. Kolisko's research, apply to the investigator of nature: "... It has been possible in this way to split apart the merely material so that the spiritual element emerges. For if you do not follow the practice of atomists and break matter up into atomic particles, but instead put its functions and forces to work, you are showing the goodwill to penetrate matter itself in such a way as to cross over into the spiritual."

Here an appeal is made to the fire-forces of the will which the *researcher* has to bring alive especially in his thinking when he applies his cognitional powers to crossing over the threshold from the material realm into that of spiritual cosmic warmth. The path and the method have been shown him in Dr. Rudolf Steiner's anthroposophy.¹²

The potentizing *pharmacist* guides matter, the product of the past, across the threshold into the realm of warmth-forces with the fire-forces of his will's activity. This crossing harmonizes with the rhythmical motion of his action in the sense meant by Ruskin when he said that he would "like better in order of thought to consider motion as a mode of heat than heat as a mode of motion."¹⁴

It should be clear from the foregoing that the potentizing process need not be viewed solely as a process leading back into a far-distant past, but also as one in which matter is carried—this time by human agency—into a future state where it is freshly united with the cosmos, and, in its suffusion by

redemptive forces, furthers the lot of human beings suffering from illness. The rhythmical potentization process thus unites past and future in present action.

Bibliography

1. Tischner, R.: *Geschichte der Homöopathie*, Leipzig, 1939.
2. Haehl, E.: *Ein Arzt wird Rebell, S. Hahnemann begründet die Homöopathie*, Berlin 1943.
3. Mittasch, A.: *Lebensproblem und Katalyse*, Ulm/Donau, 1947.
4. Siewecke, H.: *Kurzer Literaturbericht über die Nachweis- und Reaktionsmöglichkeit hochverdünnter Substanzen und Potenzen*, Manuscript, Marburg/Lahn, 1941.
5. Kolisko, L.: *Physiologischer und physikalischer Nachweis der Wirksamkeit kleinster Entitäten*, Stuttgart, 1921; *Physiologischer Nachweis der Wirksamkeit kleinster Entitäten bei sieben Metallen*, Dornach/Schweiz, 1926; with E. Kolisko: *Agriculture of Tomorrow*, Gloucester/England, 1939.
6. Pelikan, W.: 'Die Drei,' 1954, No. 4.
7. Vernadsky, W. J.: *Geochemie in ausgewählten Kapiteln*, Leipzig, 1930.
8. Wachsmuth, G.: *Die ätherischen Bildekräfte in Kosmos, Erde und Mensch*, Der Kommende Tag A. G. Verlag, Stuttgart, 1924; *Etheric Formative Forces in Cosmos, Earth and Man*, Anthroposophic Press, Spring Valley, N.Y., 1932.
9. Husemann, F.: *Das Bild des Menschen als Grundlage der Heilkunst*, Stuttgart, 1951; *The Image of Man as the Basis of the Art of Healing*, Mercury Press, Spring Valley, N.Y. 1982.
10. Cloos, W.: *Die Erde, ein Lebewesen*, Stuttgart, 1952; *The Living Earth: The Organic Origin of Rocks and Minerals*, Lanthorn Press, 1977 (England).
11. Prigogine, I.: *Étude thermodynamique des phénomènes irréversibles*, Paris and Liège 1947.
12. Steiner, R.: *Die Geheimwissenschaft im Umriss*, Dornach/Schweiz, 1909; *An Outline of Occult Science*, Anthroposophic Press, Spring Valley, N.Y., 1972; *Wie erlangt man Erkenntnisse der Höheren Welten?* Dornach/Schweiz, 1904. *Knowledge of the Higher Worlds and its Attainment*, Anthroposophic Press, Spring Valley, N.Y., 1983.

13. Steiner, R. and Wegman, I.: *Grundlegendes für eine Erweiterung der Heilkunst nach geisteswissenschaftlichen Erkenntnissen*. Arlesheim/Schweiz, 1925; *Fundamentals of Therapy: An Extension of the Art of Healing through Spiritual Knowledge*, Rudolf Steiner Press, London, 1984.
14. Lehrs, E.: *Mensch und Materie*, Frankfurt/Main, 1953; *Man or Matter*, Rudolf Steiner Press, London, 1985.
15. Adams, G. and Whicher, O.: *The Plant between Sun and Earth*, Rudolf Steiner Press, London, 1980.
16. Schultz, J.: *Die Blattstellungen im Pflanzenreich als Ausdruck kosmischer Gesetzmässigkeiten*, in 'Goethe in unserer Zeit,' Dornach/Schweiz, 1949.
17. Schüpbach, W.: *Pflanzengeometrie*, Bern/Schweiz, 1944.
18. Krüger, H.: 'Von Substanzbildung und Substanzprozessen', in 'Beiträge zur Substanzforschung,' Vol. I, Dornach/Schweiz and Stuttgart, 1952.
19. Schubert, R.: *Von den Ordnungen und Rhythmen*, Weleda-Nachrichten No. 34, 1054.
20. Wachsmuth, G.: *Die Entwicklung der Erde*, Dornach/Schweiz, 1950.
21. Poppelbaum, H.: *Mensch und Tier*, Verlag Freies Geistesleben, Stuttgart; *Man and Animal; Their Essential Difference*, Anthroposophical Publishing Co., London, 1965.
22. Pelikan, W.: *Sieben Metalle*, Dornach/Schweiz und Stuttgart, 1952; *Secrets of Metals*, Anthroposophic Press, Spring Valley, N.Y., 1973.
23. Henderson, L.J.: *Die Umwelt des Lebens*, Wiesbaden, 1914; *The Fitness of the Environment*, Beacon Press, Boston, 1966.
24. Schwenk, Th.: *Weleda-Nachrichten*, Nr. 34, 1954.
25. Bortels, H.: 'Beziehungen zwischen Witterungsablauf, physikalisch-chemischen Reaktionen, biol. Geschehen und Sonnenaktivität,' *Die Naturwiss.* 38. Jahrg. Heft 8, 1951.
26. Prandtl, L.: *Führer durch die Strömungslehre*, Braunschweig, 1942.
27. Eck, B.: *Technische Strömungslehre*, Berlin, 1941.
28. Schiller, P.E.: 'Untersuchungen a.d. freien schallempf. Flamme,' *Akust. ZS.* 1938. 3. Jahrg. Heft 1, Leipzig.

29. Leroi, A.: *Rhythmische Prozesse*, Stuttgart, 1950, Selbstverlag anthrop. Ärzte, Stuttgart, Adelheidweg 4.
30. Wachsmuth, G.: *Erde und Mensch*, Konstanz, 1952.
31. Schultz, J.: *Wirksamkeit der Tageszeiten in Wachstum und Substanzgeschehen*, Dornach/Schweiz, 1951.
32. Koliško, L.: Schriftenreihe: *Sternenwirken in Erdenstoffen*, from 1926; *Saturn und Blei*, 1953, Bez.d.H. Kleemann, Stuttgart-Obertürkheim, Asangstr. 101.
33. Fricke, R.: 'Eigenschaften und Auswirkungen aktiver, fester Stoffe und Oberflächenchemie,' *Die Naturwiss.* 31. Jahrg. Heft 41/42, 1943.