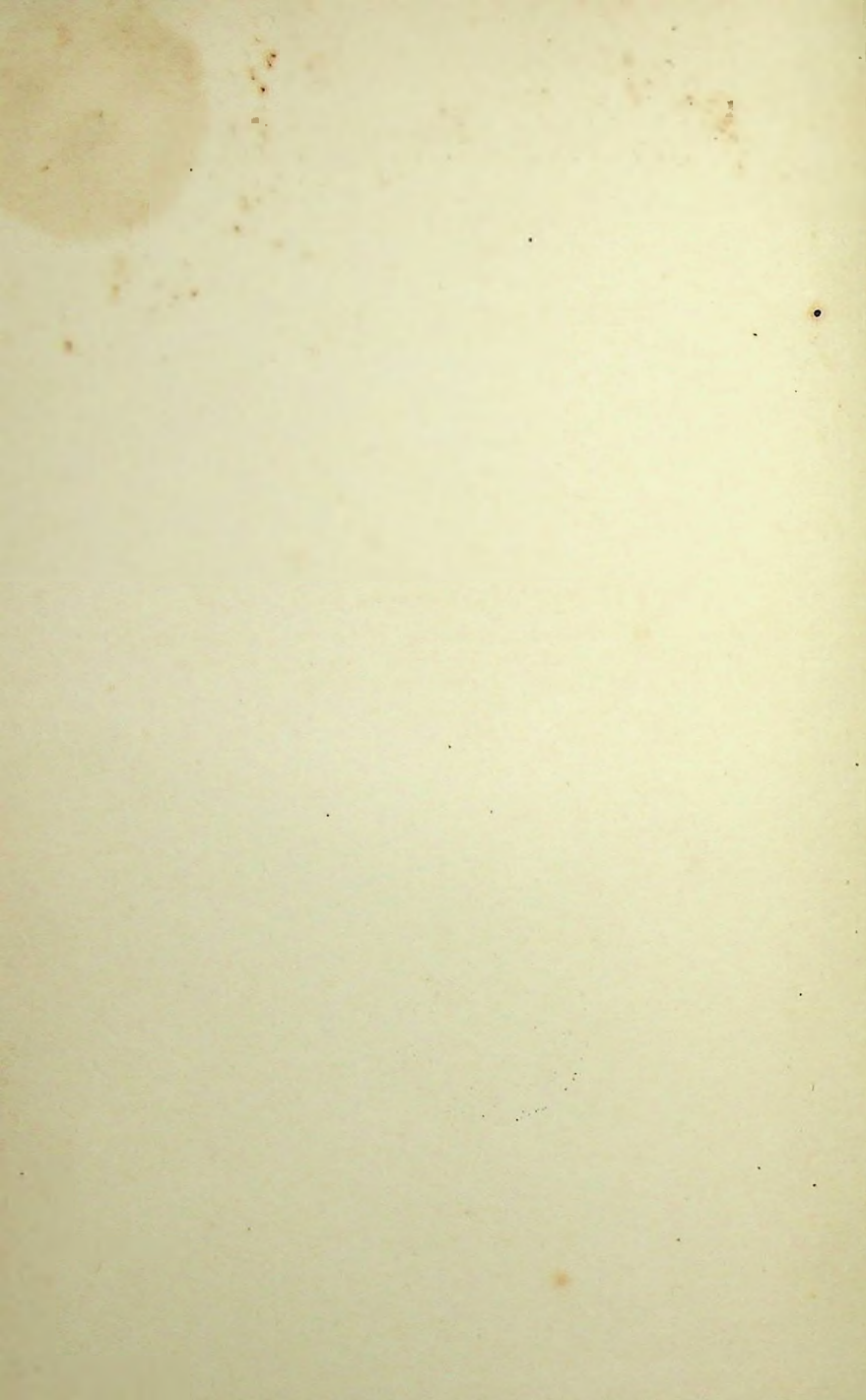




189

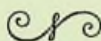


THE HOMŒOPATHIC
PRINCIPLE
IN
THERAPEUTICS

BY

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INTRODUCTION

OF late years, so much work has been done on the laboratory aspect of homœopathy, that even one of studious habits finds himself far behind the van of homœopathic investigation. That a man has been found who is capable of evaluating, digesting and bringing out the practical points of this work, is a most fortunate occurrence. We have all read the learned treatises of Bier, Kotschau, Rentz, Schulz,—each important, each shining by its own light. We have, as progressive homœopaths, felt the moral necessity for understanding this new approach to our therapeutics. Yet, surely, until Doctor McGavack's little book appeared, the fruits of such work would, I believe, have been lost to the great body of the homœopathic profession.

The teachers of homœopathy, those who have to establish the homœopathic viewpoint in students trained to think entirely on the gross material plane, will especially welcome this compendium. We may anchor the principles of our practice, and demonstrate them under control conditions, instead of depending upon the personal experience and ability of our instructors. We may explain in a perfectly logical manner many of the former vagaries and

contradictions in the provings. It may be that our whole conception of pharmacologic action, by which we have divided drugs into various classes according to the main action, may have to undergo drastic revision if the phase effect can be expanded and practically applied. The groundwork of a new pharmacology is here. Doctor McGavack's book will enable many more men of investigative turn of mind to enter the lists, profit by the work already done, and carry on. It will certainly bring an appreciation of careful pharmacologic analysis, which has been lacking in the past, largely because of the lack of a correlated source for reference. His careful development of the tenets of homœopathy form an admirably balanced compend for modern students.

GARTH BOERICKE.

FOREWORD

THE author has requested me to preface this book by a foreword. I have consented to do this with full realization that the work speaks for itself, although I appreciate a few words may assist the reader in orienting himself.

The vast amount of literature dealing with the homœopathic problem has always loomed as a formidable obstacle to scientists interested in securing an impression of certain phases of the simile rule. Although many texts, both pro and con, are available, they deal to a considerable extent with mistakes, non-essentials, and other confusing subjects. In spite of the fact that the Wolf Theses, published nearly a century ago, clearly stated what was pertinent to a discussion of homœopathy, most writers on the subject have succeeded in overlooking that basic work. A small book shorn of many of the usual redundancies is therefore very welcome.

Since Prof. Bier's fundamental contribution to medicine, in his series of articles published since 1922 and ending with "Contributions to Medicine from the University of Berlin," 1931, homœopathy has become a center of interest in medicine, especially in German medicine. It is therefore extremely desirable to have available a small very readable book

which presents the salient features of the question. Moreover a considerable number of internationally known medical and non-medical scientists have become engaged with the simile problem, with the result that an entirely new literature has been created in the last six years and homœopathy has made more scientific advance in this period than during the previous sixty. With very few exceptions this literature has not as yet reached America. This book has the added value in that it has taken cognizance of this recent literature, although necessarily only a small fraction could be included. As the work is primarily intended to serve as a text for medical students in an introductory course in homœopathy, inclusion of these voluminous reports would defeat its very purpose. In the selection of this confirming evidence the author has chosen wisely, and perhaps this was the most difficult task of all.

As long as one confines himself to a statement of the real principles of homœopathy, the simile rule, the necessity for ascertaining the effect of a drug before using it in clinical practice, the single remedy as long as the effects of combination of remedies is unknown, the prescription based upon the etiologic, pathologic, functional, and symptomatic totality of the patient, he remains upon very safe scientific ground. The inclusion of a chapter on

posology is legitimate since homœopathists often employ the minimum effective dose for the particular purpose desired. However, the question of dose usually has been over-emphasized and perhaps this material will serve to relegate it to its proper secondary position. However, the task of clearly briefly stating the facts, with sufficient but not tiresome citation of supporting evidence is difficult and the author has apparently been eminently successful in his choice. It should also be added that the failure to discuss certain subjects is motivated by the knowledge that these things are not pertinent but occasionally identified with homœopathy.

That the author's opinion that homœopathy is not an exclusive method in therapy has long been supported by the homœopathic profession in America as well as abroad, but this reiteration may serve to emphasize this standpoint. It is customary to preface or end introductions with a quotation. Perhaps none is more appropriate than a sentence from Hufeland's writings on homœopathy :

"The great experiment which mankind has attempted upon itself, called *medicine*, is not as yet ended, and indeed as all earthly things will never be brought to a perfect end, because it is *an experiment which deals with the most intricate secret of nature, life.*"

LINN J. BOYD.

AUTHOR'S NOTE

THE late Sir James Mackenzie was constantly insistent upon certain simple cardinal principles, which his biographer, Macnair Wilson, has set down as follows: "That the aim of a doctor is the prevention of disease, that disease is made manifest only by its symptoms, that in the early symptoms of disease lies the key to the foreknowledge of danger." It is with the desire to discuss therapeutic principles applicable during the functional stage of disease stressed by Mackenzie that the preparation of this manuscript has been undertaken.

The writer wishes to express his appreciation to all those who have aided in and lent encouragement to the work. Especially, does he thank Dr. Linn J. Boyd for the use of as yet unpublished manuscript, and for his helpful criticism of the entire subject matter. He gratefully acknowledges the interest shown and the constructive suggestions made by Drs. Garth W. Boericke, Langley Porter, and James W. Ward. The author has drawn liberally for material upon the sources mentioned in the bibliography, and in some instances, has embodied the thought as expressed by the original worker. For this, due

credit is here given and responsibility for all mistakes in interpretation assumed.

Finally, it is hoped the enquiring mind may find much of interest in the pages that follow. They have been collated in the belief that Hahnemann's discovery constitutes a useful portion of the heritage of every practising physician; in the thot so ably expressed at the dedication of the Hahnemannian Statue, Washington, D. C. "Hahnemann and his discovery belonged not only to Germany but to the whole world."

THOMAS H. MCGAVACK.

San Francisco, Calif., Jan. 2, 1932.

CONTENTS

CHAPTER ONE

- DEFINITION, SCOPE, AND HISTORY OF HOMŒOPATHY 15
Methods in Therapeutics. Hahnemann and his discovery.
A summation of Hahnemann's experiences.

CHAPTER TWO

- SCHOOLS OF THOT IN MEDICINE 37
The Hippocratic Rules. Allopathy, Isopathy and Homœopathy. Paracelsus and the Second Hippocratic Rule. Eighteenth Century advances in medicine. The Homœopathic School of Thot.

CHAPTER THREE

- THE TENETS OF HOMŒOPATHY IN THE MEDICINE OF TODAY 51
Widely applied illustrations of the Homœopathic principles. Vaccines. Allergic diseases. "Specifics." Individualization a keynote in Homœopathy. The single remedy. The minimum dose. Summary.

CHAPTER FOUR

- THE PHILOSOPHY OF HOMŒOPATHY 65
Life, health and disease. Homœopathy a method of pure observation. Basic and determinative phenomena. The application of basic and determinative phenomena at the bedside. Results under Homœopathic medication.

CHAPTER FIVE

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; DRUG PROVINGS 81

Intuitive or natural experiences in Homœopathy. Provings of drugs on the healthy animal and human being. The Pathologic Physiology of Hahnemann. The Pathologic Physiology of today. Muller's theory of specific sense energy and the application of drugs or other stimuli.

CHAPTER SIX

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; THE ARNDT-SCHULZ GENERALIZATION; SOME FACTORS INFLUENCING DRUG ACTION 95

Schulz original experiments. A statement of the Arndt-Schulz phenomenon. Some pitfalls in present-day research. Some factors concerned in the course of biologic processes.

CHAPTER SEVEN

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; PHASE EFFECTS 107

Definition of phase action. The universality of phase action. Conditions involved in the production of phase effects. Some benefits to be derived from a recognition of phase effects.

CHAPTER EIGHT

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; KOTSCHAU'S TYPE EFFECT HYPOTHESES; "SPECIFICS" IN MEDICINE 135

The effect Schema of Biologic reactions. Illustrations of the type effect curves. An analysis of the type effect

curves. The application of the type effect curves to Homœopathic prescribing. A discussion of several "Specific" practices in Medicine. Mercury in Syphilis. Quinine in Malaria. Emetine in Amœbic Dysentery. Other "Specifics."

CHAPTER NINE

THE APPLICATION OF HOMŒOPATHY TO THE PARTICULAR MEDICAL PROBLEM 153

A discussion of basic and determinative phenomena, using *nux vomica* illustratively. The evaluation of symptoms. Individual susceptibility (Constitution). Mental symptoms. Modalities. Particular symptoms. The physiological mechanism of symptom production. Homœopathy a specialty in Individualization.

CHAPTER TEN

POSOLOGY 171

Definition. The rule of dose. A consideration of the Quantitative Relationship which may or may not obtain between size of dose and extent of effect. Practical rules governing dosage. Homœopathic dilutions of drugs. Some common "infinitesimals" of today.

CHAPTER ELEVEN

SUMMARY AND CONCLUSIONS 187

BIBLIOGRAPHY 191

INDEX 197



CHAPTER ONE

DEFINITION, SCOPE AND HISTORY OF HOMŒOPATHY

“Never forget that it is not you but only Nature who can heal disease. You are only an assistant who increases Nature’s capacity and performance.”—HUFELAND.

Homœopathy is a therapeutic method which attempts to restore health and to prevent illness. Like all other methods in the art of healing it has its limitations of applicability. It belongs to and is part of the great field of medicine because its basic principles rest upon fundamental concepts of nature and upon logic. Homœopathy attempts to apply these principles by correlating the ascertainable facts of disease and the ascertainable facts about disease-producing agents.

The word, homœopathy, comes from two Greek roots: *homoios* and *pathos*. The first of these means resembling or similar to, and the second denotes suffering. Literally translated, then, homœopathy would mean “suffering similar to.”

Samuel Hahnemann is given the credit for discovering the homœopathic generalization and for first applying it. In actuality, such a conception of drug action did not begin with Hahnemann, as we find

suggestions of it in the works of earlier writers. He was, however, the first to make any experimental studies relative thereto, and the first to apply clinically the results of his observations.

We are prone to think of homœopathy as a school of medicine or as a system of medicine, or as a cult, tending to combine religion with medicine. At the outset let it be clearly conceived just what homœopathy is. I have said that the word literally means "suffering similar to." Homœopathy was never intended to be a school of medicine; studies relative thereto were never intended to produce any schism in the medical world. It can be most clearly thought of, and most succinctly expressed as a specialty in therapeutics or, in other words, as a method of practice for prescribing drugs and other medicinal agents.

The Scope of Homœopathy

Those who advocate and use homœopathy do not pretend that it covers the entire field of drug therapeutics. There are other methods of prescribing drugs that are equally valuable in their respective spheres. Briefly, the field of medicinal therapy may be quite completely divided as follows, dependent upon the object in mind in making a prescription:

I. PALLIATION METHOD. We all know the meaning of palliation therapy and the use of drugs ac-

ording to this method for the control of one or more symptoms (by symptoms—here and subsequently—we mean any manifestation of disease whether it be subjective symptoms, physical findings, or laboratory results) that are so distressing as to materially interfere with the patient's general health and, thus, in themselves, endanger the patient's life or materially lengthen his illness. As common examples, we have morphine, aspirin, et cetera, for the relief of pain.

2. **SUBSTITUTION METHOD.** By substitution therapy we mean supplying to the body substances normally produced within it but which, because of disease, are absent, or present in insufficient quantity. The most striking example of recent years is the use of insulin in the treatment of diabetes. Other examples are the administration of thyroid extract in myxœdema, diphtheria antitoxin in diphtheria, et cetera.

3. **PARASITICIDAL METHOD.** Our object in applying drugs with this method is to make use of their parasitocidal or germicidal effect. This method postulates a direct interaction between medicinal agent and pathogenetic organism with destruction of the latter. The action is independent of any effect of drug or disease upon the host or his tissues. Aside from topical applications—such as bichloride of mercury in pediculi—arsenic in the treatment of syphilis is the only proven example, and its action

is probably not entirely directly parasiticidal. A word about the whole subject of chemotherapy seems here appropriate. Schlossberger has very succinctly summarized the whole situation and seriously doubts whether any chemotherapeutic agent ever acts by *directly* killing the pathogenic organism or agent: "Chemotherapy cannot, as is frequently done, be considered as an 'inner disinfection' of the diseased body, but it requires the active cooperation of the organism in order to accomplish healing effects, the natural defense efforts of which it tries to support. The fact also leads to this, namely, that especially our most effective chemotherapeutic substances e.g., salvarsan, germanin ('Bayer 205') and also quinine show in test-tube investigation only a very small action against the micro-organisms, but that in the living organism they are able to successfully influence the same disease producer by the use of relatively smaller doses. Therefore in chemotherapy it is not a matter of disinfecting process in the usual meaning of the word, that is, not of a reaction that takes place between chemical agent and the disease excitors, but of a *process in which the cells of the infected body play an important role*. Also Dale found that, for instance, the benzidine dye, trypan red, has an effect upon mal de caderas (*trypanosoma equinum*) only in the mouse, while it has no effect in guinea-pigs, rats, dogs, which have been

infected with the same parasites, so the emetin produced a healing effect in amebic dysentery in the human body but not so in experimental infection in cats with *endamoeba histolytica*, can only be explained by the participation of the infected organism in the healing process. For this reason it is in the search for chemotherapeutic remedies—as already mentioned—naturally not possible to decide the question through preparatory test tube experiments, whether a chemical preparation in the living body of the animal will be suitable for therapeutic influence of an infected process, but the chemotherapeutic effectiveness of a substance can only be infallibly determined through a healing test, first on the artificially infected animal and then upon the naturally diseased body.”

Seiffert draws more extensive conclusions so that he even completely denies the “inner disinfections” according to the direct parasiticide effect of chemotherapy for which, besides many others the following observation speaks. “Many chemotherapeutic substances (trypaflavin, trypanblau, Bayer 205, hydroquinone, gold preparations, etc.) act in vivo on parasites much more intensely when given in smaller doses than in larger ones: Contrary effect with large doses (Schiemann, Neufeld, Feldt, Mayer and Zeiss, Baumgarten, Felton and Dougherty).”

4. HOMŒOPATHIC METHOD. Our object here is the selection and application to the diseased state of

a drug or other agent that will stimulate the body to increased production of its own resistance forces. As a most common example we may mention vaccines.

Each of these methods, as you can readily see, has its definite place in the armamentarium of a practicing physician and does not preclude the usage of any other, nor does it preclude the usage of adjunct methods such as physiotherapy, hydrotherapy, et cetera, the application of which may or may not lie within the field of homœopathy. It is the province of this course to deal with the fourth of these—a method which is consciously or unconsciously applied to a lesser or greater extent by every practicing physician.

Briefly, we have said homœopathy is a method of prescribing curative agents. It, then, has to do with the art of medicine, with the selection of the particular agent, usually a drug, to be utilized in any given case of disease. What is this method? All methods of art must be based upon science, for, as we well know, art is but the application of science to any particular field. As the painter must have certain rules for his guidance, based upon known laws of geometry, perspective, color harmony, et cetera, so the physician must have certain rules based on definite laws and scientific principles. So, in applying drugs to disease by the homœopathic

method, we must be governed by certain rules, first and primary of which is "Treat likes with likes," or, more clearly stated: "Select the medicinal agent in any given case of disease that has produced in healthy human beings manifestations most similar to those present in the diseased individual." This is the main and basic rule in homœopathic prescribing and its proper application constitutes the entire art of homœotherapy. It is obvious from this brief statement of the simile principle that it is purely and simply a "finding principle"—a means of selecting the particular remedial agent in any given condition.

Hahnemann and His Discovery

We have said that every rule of the artist, to be of value, must be supported by scientific fact. Hippocrates was the first to suggest how similar are the effects of drugs to the diseases they seem to be most suitable for treating. The Swiss physician, Von Haller, in the middle of the eighteenth century, again called attention to a similarity which seemed to exist between diseased pictures and the effects of the drugs most applicable to them, and advised the trying of drugs upon healthy persons before utilizing them in the diseased. However, neither of these men, nor a number of others whose writings contain similar comments, made any experimental studies

relative to the thoughts they had so brilliantly enunciated. In the course of a rather academic and analytical life it is not strange that Samuel Hahnemann, living in the eighteenth and early nineteenth centuries, should have had occasion to read Hippocrates, Haller, and others. No doubt his ideas were duly influenced by them. Perhaps something of the history of this man is not amiss, for I do not believe that an appreciation of homœopathy, as it is today, can be had without due reference to its history and traditions. I am heartily in accord with August Bier, the Berlin surgeon, who remarked that "all too late did I realize the great shortcomings in my medical education, turned to the older classics in medicine, and found in many instances more complete observation, more accurate thought, than prevails today. It was then I learned a lesson in modesty. What I was wont to consider my intellectual property had been detected by others before." So perhaps we may best remove certain rather prevalent misconceptions of the origin of homœopathy by some reference to Hahnemann and his work and, thereby, clarify our own minds and our own conceptions of the value and thoroughness of the principles he discovered.

As is the case of any man who has made history, all sorts of stories have arisen in regard to his boyhood years. It is apparent, however, that at all

early age Hahnemann was conversant with a number of European languages and had shown quite an adaptability for chemistry and other basic sciences. Of poor parentage, it was necessary that he win for himself his own education. So he began tutoring in the classic languages at the early age of twelve years. His medical studies were undertaken at Leipsic, continued in Vienna, and concluded at Erlangen University. These various changes were a bow to the necessity for making his living translating while studying for his chosen profession. Subsequent to receiving his degree of Doctor of Medicine at Erlangen, he practiced for two years, at the end of which time he very humbly wrote a close friend: "I have been putting drugs of which I know little into bodies of which I know less; so I can but renounce the practice of medicine that I may no longer incur the risk of doing injury."

In fact, so disgusted did he become with the practice of medicine in the Fenny country of Saxony that he gave it up and removed to Dresden to turn his attention to the study of chemistry, philology, philosophy, pharmacy and medicine. While experimenting in his own laboratory by day, he made his living by night translating from other languages into German. In order to obtain better literary facilities for this purpose, he moved, in 1790, to Leipsic. It was in this work of translation for

other physicians that he first encountered the stimulus for the research that was responsible for the discovery and later enunciation of the homœopathic principles. He had been employed by one of the faculty of the University of Leipsic to translate Cullen's *Materia Medica* from English into German. Cullen was, at that time, professor of medicine at Edinburgh University and had embodied in a book his "system" of medicine. He had naturally included in this book a rather detailed description of one of the newer remedies: namely, cinchona, or Peruvian bark. This had been first successfully used, as the name implies, in Peru and had later been brought to Europe by the Jesuit Fathers. So useful had it proven in fevers, particularly those of a remittent character, that its use rapidly spread over Europe. Hahnemann was struck with the detailed report in Cullen's book and in copious footnotes from his translation, questioned the rationale of the explanation of its actions as detailed by the author. His two years' practice in the marsh country of Transylvania, where ague was rampant, had not been without fruit for he had learned to realize that Peruvian bark was of actual value in the treatment of that most persistent disease, malaria. Inasmuch as the reasons for its action, as described by Cullen, did not appeal to him as altogether rational, it was not strange that the words of Von Haller, the Swiss

physician, should come back to him and suggest the possibility of trying the drug in his own body. This he did and, fortunately for certain principles of drug action, he proved sensitive to the drug. He was quite amazed to find that he went successively through the manifestations of ague. He repeated his experiment, again finding that the symptoms produced in his own body by the drug were similar to those it had cured in his malarial patients. Was it little wonder that these suggested to his mind the possibility of a definite relationship existing in all cases of disease between drug agent and malady?

Hahnemann then tried the experiment on twenty-one of his close associates and companions. If the dosage was sufficient, these reported a result similar to his own. Such an experiment excited study. The physiological action of the drug upon himself, his family, and his friends, was similar to that of the action of the disease for which it was considered a specific. It was natural to ask these questions: Does cinchona alike produce and cure ague? Is the specific curative power of drugs founded upon some definite principle? Do they uniformly excite "counterfeit" diseases to those which they remedy? It was equally natural to try to answer these questions and, with that in mind, he tested or proved ninety drugs in his own body. He gave the drugs to his friends and associates. He delved into medi-

cal history for the records of poisonings, either intentional or accidental. He gave drugs to sick people when the symptoms they presented resembled their effects upon healthy human beings. So after six years of labor and extensive study in experiments with some ninety drugs on hundreds of people, he felt justified in making tentative deductions from his work. This he embodied in an essay entitled "On a New Principle for Ascertaining the Curative Power of Drugs." This was published in Hufeland's, the leading medical journal of the day, in the year 1796.

In the prefatory notes, Hahnemann clearly states that it was his intention to bring to the medical world the results of his six years' work with the expressed purpose of encouraging further experiment to ascertain the true effects of drug agents. Unfortunately Virchow had not lived, the importance of Malpighi's discoveries was not fully realized, the Galenic theories were still dominant, systems of medicine were as many in number as its professors, and preconceived theories were the basis for diagnosis and prescribing. Is it little wonder that instead of stimulating research in pharmacology, he produced a schism in medical thought and method so great that the prejudices it engendered have been completely overcome only in the light of our present knowledge and open-mindedness?

I have given you an all too brief sketch of Hahnemann and his work, and of the beginnings of homœopathy. It may seem strange to introduce the discoverer of a law in a discussion of it and its applicability. However, so many misconceptions have grown up about the beginnings of Homœopathy that, in all fairness, we must try to dispel them by viewing Hahnemann and his work in the light of the events of his day.

A Summation of Hahnemann's Experiences

I have said that theories of disease were rampant. Hahnemann built no theories of disease but made every effort to deduce logically from observed facts. The mind through which these observations were recorded and these deductions made, was no mean mind. In the following passage from his *Organon*, he has made one of the most comprehensive expressions of medical idealism in all literature and has epitomized his own life's effort:

“If the physician clearly perceives what is to be cured in diseases, that is to say, in every individual case of disease (*knowledge of disease, indication*); if he clearly perceives what is curative in medicine, that is to say, in each individual medicine (*knowledge of medicinal powers*); and if he knows how to adapt according to clearly defined principles what is curative in medicine to what he has discovered to be undoubtedly morbid in the

patient, so that recovery must ensue—to adapt it, as well in respect to the suitability of the medicine most appropriate according to its mode of action to the case before him (*choice of the remedy, the medicine indicated*), as also in respect to the exact mode of preparation and quantity of it required (*proper dose*), and the proper period for repeating the dose;—if, finally, he knows the obstacles to recovery in each case and is aware how to remove them so that the restoration may be permanent: *then he understands how to treat judiciously and rationally, and he is a true practitioner of the healing art.*”

Let us scrutinize the above paragraph closely. To remove the causes of disease has been the aim of physicians from the time of Hippocrates, or, if you please, from the day of Æsculapius. To do so with any degree of success necessitates a knowledge of disease; so in the third paragraph of the Organon, Hahnemann has placed his remarks relative to etiology last rather than first. In this great medical reformer's day, conceptions of disease were mere speculations, arrived at by deduction from purely theoretical considerations. Hahnemann inaugurated a systematic study and individualization of each case of disease from the standpoint of the clinician. Later Virchow did just as brilliant and painstaking work from the standpoint of pathology.

Today their combined effort, perfected and enriched by the researches and labors of many men, is the routine procedure of every medical student.

In order to use drugs, one must "perceive what is curative in them;" *i.e.*, one must have a knowledge of medicinal powers. When Hahnemann became a physician the medicinal virtues of drugs were subjects for endless conjecture and speculation. Indeed, the majority of reliable therapeutic agents were lay discoveries and household medicaments. In Hahnemann's day the medical world was therapeutically divided into groups, each favoring some one particular treatment, and each building theories of disease to fit some particular form of therapy. For instance, the Ferraria comprised a group of men who believed all the ailments to which human flesh was heir could be cured by the administration of iron and iron products; the Cinchonaria, or Febrilists, in a similar manner, considered Peruvian bark a cure-all; the Plebotomists thought disease could be "drawn off from the body" by bleeding or leeching; and, strangest of all, were the Asinaria who thought the administration of asses' milk would remove morbid agents and their consequent pathologic states. So we might enumerate indefinitely.

Hahnemann ignored such empiricism and demanded direct experimentation. What is the result? Today, no drug is welcome in or out of school medicine until

it has proven itself in laboratory and clinical tests. And, may I interpolate, no method of experimentation has as yet been found more delicate or more accurate than that performed upon the human body. The viewpoint of school therapeutics has shifted numerous times in the last one and one-third centuries to keep pace with ever-changing medical theories. The inductive method adopted by Hahnemann and those who have worked with him *leaves theory for fact; fact does not change; it is added to but it does not change.* Reactions of the human healthy body, recorded in the words of the person acted upon, admit no misinterpretations with changing medical terminology, altered biological conceptions, and newer scientific attitudes. So the materia medica pura of the early nineteenth century can be as intelligently read by a medical student of today as by a physician contemporary with its publication. Medical minds of the twentieth century the world over recognize the value of this type of experimentation. For instance, we find sporadic efforts in using volunteers for serologic studies or in using the hopelessly insane for experiment. Only several weeks ago I was struck with an editorial in one of the leading medical journals of our country, criticising the pharmacologists for the enormous amount of very tedious, careful, even brilliant, but hopelessly futile, work done with drugs upon certain fish, toads, frogs,

and other animals, whose anatomical and physiological mechanisms are in no way comparable to those of man. Further than this, we find the clinician, the chemotherapist, and the immunologist going beyond this elementary stage and taking every opportunity to observe the effect of medicinal agents upon their fellow human beings. Is it a far cry before the method originally suggested by Samuel Hahnemann will be the one of election for our study of drugs?

Continuing our reading of Hahnemann's third paragraph of the *Organon*, "the physician should know how to adapt, according to clearly defined principles, what is curative in medicines to what he has discovered to be undoubtedly morbid in the patient; so that recovery must ensue." A third time we find Hahnemann a pioneer, clearly defining the principle underlying the correlation of drug and disease in those very familiar words, "*Similia similibus curantur.*" These three words embody the whole essence of homœopathy. They place it as a specialty in the realm of therapeutics.

Today we do not consider homœopathy in any sense complete as a system of therapeutics. *Neither did Hahnemann*, and therein both many of his followers and the majority of his antagonists have completely misinterpreted him—all to the detriment of the lasting work he has done for the broad field of medicine. *Had he believed homœopathy exclusive*

of all other forms of therapy, would he have recommended palliation where the vital function of cells (dynamis or spirit-like force) may be so low as to preclude reaction; would he have discussed subjects of hygiene, hydrotherapy, and electrotherapy in such detail; would he have been first to insist upon isolation precautions against contagion in infectious disease; and, above all, would he have said, "If it be necessary to make considerable change in the diet and entire hygienic regimen, the ingenious physician will do well to mark what effect such changes will have on the disease before he prescribes the mildest of medicines"? No, there is no such thing as a universally applicable method of treatment known to medicine and there probably never will be. For example, bone grafting is a very laudable procedure in poorly healing fractures, though one would hardly advise it as a method of treating a case of typhoid fever. The bronchoscope and a pair of properly constructed forceps comprise the instruments quite efficacious for dealing with a cough due to a fish-bone in the throat, but one would hardly expect to relieve the cough of tuberculosis by picking the bacilli from the lungs. There is an old Arabian proverb that "A hatchet is a good thing but not to eat soup with."

The same may be said of homœopathy. Homœopathy covers a portion of the field of therapeutics.

We find it applied by all physicians. We shall later see that vaccines represent one of the purest applications of homœopathy; that asthma desensitization is a distinctly homœopathic procedure; that radium would appear (at least in skin diseases) to act in a homœopathic manner (Bier); that the so-called specifics, such as quinine, mercury, emetine, rhus toxicodendron, et cetera, owe their curative action in any given case to the degree of homœopathicity obtaining.

I have said that Hahnemann's third paragraph of the *Organon* is comprehensive. Having selected a drug, "the exact mode of its preparation and the quantity of it required, and the proper period for repeating the dose" must be known. Our large pharmaceutical houses, some of which are devoted to the production of but one or two products, are high tribute to the exactness of preparations required to ascertain uniform and comparable results from a given medicinal agent. In subsequent lectures, I shall show that in the matter of quantity, Hahnemann's prevision is again to be marveled at. The x-ray demonstrates substances in the twelfth to fifteenth decimal dilutions. The bodies of animals have shown lethal effects with certain substances in attenuations corresponding to the twentieth decimal. Any meeting of physicians today may cas-

ually discuss drug actions of dilutions well into the millions.

One hundred and twenty years ago Hahnemann believed "*the physician's high and only mission was to restore the sick to health, to cure as it is termed.*" He concluded his paragraph three of the Organon by saying that only after the acquisition of:

1. A knowledge of disease,
2. A knowledge of drugs and their dosage,
3. A knowledge of the proper correlation between drug and disease, and

4. A knowledge of the obstacles to recovery can the physician "understand how to treat judiciously and rationally, and then, and then only, is he a true practitioner in the healing art." Today we see his concepts embodied to a more or less extent in the practice of all physicians, sometimes consciously, sometimes unconsciously, sometimes to an almost negligible extent, and sometimes nearly to the full limit of their possibilities.

Like all great masters, what a farseeing vision was his. If we are to believe contemporary history, his was an outstanding intellect, one interested in the then known sciences and one which by general acknowledgment led in language, chemistry, pharmacy, and medicine. Berzelius said of him, "He would have made a great chemist had he not become a great quack." His wine test for arsenic

stands today little changed. His knowledge of the preparation of drugs was so thorough that he, of all men, was chosen to standardize the pharmaceuticals of the German Empire, and to correct the evils of substitution into which unscrupulous pharmacists had fallen. Hufeland prized him as among his best friends and co-writers. His outstanding innovations in the field of medicine include the introduction of the decimal system, a means of "making insoluble drugs soluble," and the single remedy. Whatever, then, his work and his conclusions, we must credit him with brilliant genius and sincerity of purpose and action. We have seen that the principles he enunciated remain today unchanged, very much as the principles of the steam engine, as discovered by James Watt, remain the same. Homœopathy, however, comes to us with refinement in method and detail as great as those to be found in the development of locomotive apparatus.

It is thoroughly in keeping with the subject to discuss so fully the discoverer of homœopathy as I want you to have a thorough appreciation of the background of our subject, with due regard for the earnestness and sincerity of the man who so boldly departed from Galenic prejudices to initiate the beginnings of our modern pharmacology. I wish, too, that you recognize homœopathy, not as a school

of medicine, which you can clearly see it was never intended to be, but as a specialized, intensive study of drugs and other agents, with a view to applying them for their curative action in disease. Its field is definitely limited, as we shall see later. Within this field it is exclusive and supreme. Outside this field, it does not intrude.

I am reminded of Virchow's memorable words which may, with great profit, be committed to memory: "No matter, whether one seeks to advance through anatomic investigation of the diseased, or another through clinical observation of the processes, a third through pathological, and a fourth by therapeutic experimentation, or one through chemical or physical, and still another through historical research, science is big enough to allow space for all these endeavors, provided they do not pretend to be exclusive, provided they do not transgress their limitations, provided they do not claim to perform everything. Extravagant promises always have resulted in harm; exaggerated pretensions always injured; self-over-estimation always has offended or else made a laughing stock of itself." Let us then consider the merits of homœopathy in the light of present-day knowledge.

CHAPTER TWO

SCHOOLS OF THOUGHT IN MEDICINE

"Because the mother of experience is she who gives experience—use, order, method and art without which medicine amounts to nothing."—PARACELUS.

"The technical sciences, to which I believe medicine belongs, should endeavor to set up general rules which the investigator has found through the inductive method. In this way the practitioner is assisted in correct action by proceeding deductively from these rules. Examples of this are, in surgery asepsis, and in internal medicine antisepsis." Thus speaks August Bier in his introduction to "Contributions to Medical Science from the Surgical Clinic of the University of Berlin." He continues, "Every science has two means of recognizing and progressing, analysis and synthesis, separation and union. It seems as if our present day medicine knows only the first. Analysis without synthesis leads only to verbosity and prolixity."

The necessity for rules of action has been evident in medicine from its earliest days. We are constantly referring the particular to the general, and summing the particular to inductively produce the general.

The Hippocratic Rules

In the works of Hippocrates, two modes of procedure in therapy stand out. As stated: "The complaints of diseases are cured through a method of treatment which opposes it. This holds true for every disease . . . A different way (for therapy) is this: The disease is produced by influences which act similar to the healing process and the disease condition is removed through remedies which produce similar symptoms to the disease." These statements actually represent one of the earliest recorded enunciations of the *contraria* and the *similia* principles. The Hippocratic school was entirely dependent upon pure experience as a basis for its thinking, which forces us to conclude that these concepts represented inductive analysis of such experiences. The writings of the school are ample testimony of the thoroughness of the experience-science thus established, so that we may accept with certainty the fact that the two fundamental rules above quoted were the final conclusions of the group, based upon a large number of well studied experiences in the sick room. As Stiegele remarks, "Hippocrates was able to place the two principles of the healing art (*similia similibus—contraria contrariis*) tranquilly together. His medically trained eye did not see these two therapeutic

possibilities in opposing fighting positions, as in the last century, and each of these appealed to the thinking observer as a systematic structure with a definite aim, depending upon the condition involved. Only the passionate tendency of science during the succeeding centuries to place decisions on a sharp knife edge of the "either-or," and to overlook with stubborn defiance of the dogmatic the "and" which creates organic co-ordination and enables fruitful development was able to make us believe that we were confronted with contradictions. Only the calm observation of all events which we observe in our daily studies of the relation between disease and cure will be helpful in order to clarify what pathways are preferred by nature in its teleological task of cure."

Actually, these principles represent remedy finding rules, both of which have been successfully used in selecting the therapeutic agent at the bedside, and both of which may lead through different thot processes to one and the same remedial substance. Let me illustrate: In a case of bacillary dysentery, if we approach the problem through contraria thinking, our aim shall be to oppose the action of the disease; this is most logically done through opposing the cause. We desire then to use an antiseptic capable of destroying the micro-organic cause. Mercuric chloride suggests itself as such an agent. We

should administer this in easily tolerated doses, probably 0.001 gr. Now, let us think for a moment along the lines of the simile principle. In this instance, we would want a remedial agent capable of producing a pathologic condition similar to that presented by the disease, and manifested through similar outward signs and symptoms. Again, we might consider mercuric chloride, as it is capable of causing similar bowel ulceration and of manifesting such pathology through outward signs resembling those present in the disease. Our object in this instance, would be the stimulation of the tissues of the host—by way of leucocytosis, antibody formation, etc.—to a further reaction against the invading organism. In other words, we would attempt to abet nature's own reaction to the disease agent and its damaging effect. The dose selected would be that taught by experience as the smallest amount having a desirable effect—usually proven to be 0.001 gr. Hence, by either of two avenues of thought, we have arrived at one and the same remedy for one and the same diseased state. In the instance cited, experimental study has not demonstrated that one of these principles is wrong and the other correct. As Bier suggests, we should, at least at the present time, assume a heraclitic attitude to all of the products of inductive and deductive reasoning and theoretical thinking, when such reasoning and

thinking is based upon well thot through data. To use his own illustration: "The extremely valuable and practical antisepsis was brought about through theoretical thinking and it furnishes us with proof of how ridiculous some practitioners are if they look down upon this theory and belittle it. And is it not peculiar that plain practice never revealed a pathway to us whereby the principle which forms its basis can be recognized; that in asepsis we find the key for the further development of antisepsis, namely to enforce absolute cleanliness in treating wounds? One would think that empiricism, æsthetic feeling or some other thot during the thousands of years of the recognized and unrecognized medical profession, should have lead to this. But this did not happen. It required the great detour by the way of bacteriological theory in order to find this simple practice."

Allopathy, Isopathy and Homœopathy

Moreover, it is obvious from the example I have cited, that Bier's further conclusions are, at least for the present, sound: "I strongly stress that the three main rules of therapeutics, namely, allopathy, isopathy and homœopathy, do not represent thot necessities nor can they be sharply separated from each other." What I am trying to emphasize in this connection is clearly this. Our grasp of reality is

actually exceedingly limited. It is as though the world were circumscribed by a thick wall in which are a number of holes. By looking through each of these it is possible for us to orient ourselves correctly. If, however, we look through but one, our vision is too narrow, and our conception prejudiced. Fortunately, the practising physician is forced to recognize how illusory it is to treat medicine simply as an applied natural science; but without practice how frequently does he fail to recognize how much too narrow his theory is. In the field of therapeutics, how lost would be the individual in practice if he could not make use of its three main rules as first clearly outlined by Hippocrates and recently so ably discussed by Bier. It is often necessary to oppose the damaging action of disease agents, or even the "over-reaction" of the body against them. One would certainly oppose the damage effects of an inflamed appendix by removal of the entire area involved, *i.e.*, by elimination of the ultimates of the process. At the same time one would be justified in favoring the defense reaction and eliminating the toxæmia present by the administration of remedial agents directed toward increasing general body resistance and specific resistance against the bacteriologic cause of the inflammation. This is an illustration at one and the same time, of the *contraria* rule, and of the *simile* principle or the *isopathic* generalization.

We would hardly ignore the value of the simile principle in the utilization of the ultra violet ray in the treatment of tuberculosis, recognizing, in other words, the well proven fact that overuse of this procedure aggravates the condition already present.

While it is the province of these lectures to deal with the rules of isopathy and homœopathy, which are, for practical purposes, one and the same, the author wishes his hearers (and readers) to realize that the true physician must not ignore other equally well established and valuable principles in therapeutics. Isopathy and homœopathy establish no exclusive dogma. They offer valuable principles in treatment, which in the opinion of Bier, are actually more fruitful than the third rule, allopathy, but by no means take its place.

The first of the two rules for therapy laid down by Hippocrates and his school seemed so self-evident as to be axiomatic; disease and health were evidently opposed in much the same way as good and bad, night and day, cold and warm contrast with each other. Asepsis and narcosis in surgery present as excellent examples of this principle. If one reads carefully this first rule, it will be noted that nothing is said about the disease as such, but only about the symptoms present. Reference is made apparently not to the disease in its own nature, but to the disagreeable manifestations it has caused.

The careful experience science of Hippocrates was almost totally ignored in the centuries immediately following. Haeser writes of the second century A. D.: "Healing was never more confused than in the middle of the second century. The numerous schools developed after Hippocrates,—dogmatics, empiricists, herophilism, erasistraterism, pneumatists—fought bitterly with each other." Not until the time of Galen at the end of the second century were medical ideas brot together into one system, sufficiently broad in its conceptions to dominate medicine completely for more than thirteen centuries, and not unfamiliar in its bare outlines to the physician of today. As to therapeutics, Galen definitely advocates the first Hippocratic rule, *contraria contrariis curantur*, and weaves this into his conception of the four elements, the four cardinal characteristics of matter and the four basic humours. He makes no mention of the second rule, though undoubtedly cognizant of its presence in the writings of Hippocrates.

Paracelsus and the Second Hippocratic Rule

The Galenic school* of thot flourished until about the 16th century. Vesalius and his co-

* The term, "school of medicine," is used here and subsequently in somewhat the same sense as we speak of schools of science, *i.e.*, to represent that which has been approved over a long time without ignoring or neglecting the value of subsequent contributions.

workers in anatomy disturbed the anatomical structure on which Galen had based his teachings. There was no quibbling with facts so completely capable of demonstration thru the senses. Not so with the other angle of attack made on the Galenic conceptions. Paracelsus' extensive experience with industrial poisonings, his thoro analysis of clinical material and his familiarity with the works of earlier writings, led him to conclude that a peculiar relationship existed between the recuperation and healing of diseases on the one hand and the effect of drug substances which are able to produce similar disturbances on the other. Clinical experience was of little value against orthodox dogma. Experimental pharmacology was unknown, so that Paracelsus' conclusions from carefully thot thru clinical data, coupled with the boldness with which he antagonized his opponents, only served to heap upon him the calumny of his contemporaries.

Eighteenth Century Advances in Medicine

Not until three hundred years later, when great advances had been made, particularly in the field of the exact sciences, were the clinical deductions of Hippocrates, Parcelsus, and their disciples put to the test of pure experiment. The dogma of Galen had received further decidedly fatal blows, and other systems of medicine had sprung up like mushrooms—were indeed as many in number as

the teaching heads of various universities. Stoll, Kampf, Brown, Steffens and others permitted their speculations to carry them far afield, as may be inferred from the following discussion by Steffens: "Poison is the appearance of the universal contrapoint of an individual, or of the individual contrapoint of a universal function, or, finally the appearance of an external difference as contrapoint of the internal indifference.

"Health is the adjustment of the body for the soul, complete indentity of the soul and the body, but diseases 'can only be understood from the total tension of the organization.' They 'either originate in that the relative external (vegetative) tension becomes an inner (animalic) or that in the animal the vegetative is present.' And towards the end: 'Disease is the endeavor of the individual functions to cover the form total of the organization in its potency.'"

In contrast with such speculation, one is refreshed to find minds that could not be stultified by such dogma and who could attach themselves to the actual and the true in the field of medicine unfettered by preconceived dogma. Among such were Bell, Hunter, Gren, Hufeland. Hufeland's introduction to the first issue of his *Journal of Practical Medical Art and Wound Healing* (1796) suggests the chaotic state of medical thot and practice, and

takes a bold stand against it. "It shall remain an archive of facts, of experiences concerning diseases and the effect of remedies, and as much as possible free from hypothesis, systems and cures à priori. This seems to me to be the best way of teaching and nourishing practical medicine and to lead the spirit of physicians always to nature and experience as the only source of it and to become attached to the method of guarding the medical world from the spiritual despotism of all kinds of forced thinking and to maintain through a many-sided representation of the natural phenomena, through a variety of consideration of the healing process, that liberty of spirit and opinion which also for our science has been the greatest Palladium of truth and completeness. Without doubt the history of medicine during all periods calls to us: The closer one attaches himself to nature and pure experience the more complete his observations and successes, but the greater the number of despotic rules, names, opinions and different sects, the more faulty, limited and unnatural has always been the condition of medicine."

This same journal in the same issue introduces us to the work of the first individual to test the effects of drugs on healthy human beings. As aforementioned, Samuel Hahnemann's labors of six years here appeared under the title, Experiments Con-

cerning a New Principle for the Discovery of the Healing Forces of Drug Substances, besides a Short Review of What is Known so far.

The Homœopathic School of Thot

Hahnemann created about him a school of thinkers interested in the application of the simile principle to disease. Such men as Stapf, Boenninghausen, Hering, Graham, Hull, amplified the experiments and broadened the clinical usages of their teacher.

Not until late in the nineteenth century did this second rule of Hippocrates make the force of the principle underlying it felt in the laboratory. Schulz, Professor of Pharmacology at the University of Griefswald, found himself unable to account for the peculiar action of yeast cultures to various concentrations of different poisons. The Arndt-Schulz Generalization (discussed later) was the final result of his effort to explain his findings, and thru this generalization he became interested in the homœopathic problem and has devoted the majority of his research to its further study. Only very recently the scope of this work has been broadened by Kotschau and Rentz (See chapters VII and VIII) both of whom have made extensive studies of phase effects of remedial agents. Their work brings much of value to the underlying homœopathic rule from the laboratory standpoint. From the clinical side,

Bier's and Zimmer's work of the past twenty-five to thirty years has afforded clinical proof of the efficacy of the homœopathic method in treating disease. Their observations are of added value as the accuracy thereof and the results obtained can, in no way be predicated upon early homœopathic training or prejudice.

To conclude briefly, the homœopathic (*similia*), the isopathic (*æqualia*) and the allopathic (*contraria*) principles represent schools of thot in the therapeutics of medicine, one or more of which offers a valuable avenue of procedure in the individual case of disease. While one may prove more widely applicable than another, and hence more useful, no one of these concepts represents a thot necessity, but rather affords a viewpoint in any problem complementary to the others.



CHAPTER THREE

THE TENETS OF HOMŒOPATHY IN THE MEDICINE OF TODAY

“What knowledge is of most worth? The uniform reply is: Science.”—HERBERT SPENCER.

We have seen something of the situation in which homœopathy arose and something of the genius of the man whose studies brought about its discovery. We have spoken of its limitations, we have defined it as a method of practise for prescribing medicinal agents and have mentioned the rule—treat likes with likes—by which this method is applied. We have hastily sketched the scientific work which led Hahnemann to the elaboration of this method of prescribing drugs. His studies led him to conclude that a definite relationship always exists between the manifestations of the disease and the drug which will prove curative for that disease. This relationship he stated as “*Similia similibus curantur*”—literally translated, “Likes are cured by likes.” Stated differently, that drug will prove curative in any case of a disease when its effects upon experimental animals and healthy human beings most closely simulate those present in the diseased individual; or perhaps we

might put it more simply by saying that a comparable relationship may exist between a diseased state and the effects of the drug which will restore such a state to normal.

*Widely Applied Illustrations of the
Homœopathic Principle*

The homœopathist does not pretend that the above law is universally applicable, as aforesaid, but he does contend that it affords the best method thus far known to medicine for the selection of the remedy for the cure of the sick. Let us glance at several modern therapeutic agents widely acknowledged as valuable procedures. Vaccines are in common use for prophylaxis and cure. The causative agent of the same or a similar disease is used for its cure.* This is a tacit admission of homœopathic practice and a wide-spread example of its application.

* I speak of "similar" here in that it is hardly conceivable that the same biochemical influences can be exerted by the living pathogenic agent and by the vaccine made from it. The difference between living and dead cells in the process of vaccine manufacture is obvious. The heat required to complete the sterilization of vaccine products (55 degrees centigrade) and the antiseptic agent (usually one-half per cent. phenol) added to the vaccine must alter the previous chemical structure and establish a new physico-chemical equilibrium. Clinically, we have proof that certain alterations do take place in the preparation of these products for our use against disease. Vaccinia (that is, the after effects of vaccination) presents a syndrome similar to that of small-pox but differing qualitatively as well as quantitatively. There are usually

A second group of pathogenic agents applied homœopathically are the substances in common use for the cure of asthma, hayfever, and other diseases of foreign protein origin. What a joke it was thought when Weir Mitchell first wrote of cat-asthma. Today the proper foreign protein or pollen is selected by individualization of the manifestations of the patient when exposed to the action of these substances. The homœopathist has been treat-

ing diseases of sensitization for nearly one and one-

no prodromes except general malaise. The condition runs its course in from five to ten days. There is but one pock mark, etc. As another example, we may mention the universally utilized and successful application of typhoid vaccine. The vaccine and the disease both produce agglutinins of the same type. The after effects of typhoid vaccine injection will often produce mild manifestations simulating the disease typhoid fever. However, the rose spots do not appear, the spleen does not enlarge, the leukopenia may be absent, etc.

It may further be pointed out in this connection that if vaccines are good examples of homœopathic prescribing, then the homœopathic law must be false, inasmuch as many vaccines are absolutely valueless. If one analyzes the field of vaccine therapy, one quickly observes that the most successful vaccines have been made from easily cultivated, widely adaptable organisms or viruses; hence autogeneous staphylococcic vaccines, typhoid vaccine, small-pox vaccine, diphtheria toxin, have proven to be valuable prophylactic or curative agents in contrast with virulent strains of pneumococcus, the gonococcus, the meningococcus, etc., with their narrow temperature and cultural adaptability, which have been utilized with no success whatsoever for vaccine preparation. Felton's work with the pneumococcus is an admirable example of the difficulties to be had in obtaining a vaccine under biochemical influences comparable to those present in the living organism.

half centuries, individualizing the manifestations of the patient in quite a different, yet in, seemingly, as accurate a way. Every set of cutaneous sensitization tests contains common oat (*avena sativa*), yellow dock (*rumex*), plantain (*plantago major*), ragweed (*ambrosia*), sage (*salvia officinalis*), mugwort (*artemesia vulgaris*), elder (*sambucus nigra*), burr-flower (*hydrophyllum*), spikenard (*aralia racemosa*), etc.,—all known to produce either hayfever or asthma symptoms in sensitive individuals long before the laboratory was capable of demonstrating their power as antigens.

As a third group of substances in general use among all physicians we may mention the so-called specifics. For example, mercury proves homœopathic in syphilis, quinine in malaria, emetine in amœbic dysentery, gelsemium in influenza, calcium phosphate or phosphoric acid in rickets, and so forth. The parasiticidal effect of mercury (Lomholt, *Brit. J. Dermatology*, 32:353, 1920) of quinine (Wesselhoeft, *New England Medical Gazette*, 48:64 et 637, 1913) of emetine (Dale and Dobell, *J. Pharm. and Exp. Therapy*, 10:399, 1927) no longer is believed to account for the results obtained. These seem rather to depend upon the stimulation of the diseased tissues to a normal reaction.* Precisely, this

* In this connection it may be mentioned that drugs are capable of acting as antigens and that the stimulation obtained through

nicity of stimulation is the entire purpose of homœopathy, for it aims to administer in disease the agent which has a selective action upon the affected tissues and functions. The above mentioned groups of medicinal agents give us some conception of the widespread application of homœopathy and its general use by all practitioners of the healing art. In other words, the homœopathic principle is a principle of nature, which may be and is utilized accidentally as well as intentionally. The homœopathist makes every effort to utilize this law intentionally by observing the comparable effects that may occur between drugs and the diseased states for which they are curative. Those not versed in homœopathy fail to make such comparisons and consequently make

homœopathy is actually comparable to antigen—antibody reactions or immunologic processes. This subject will be discussed later, but several examples may be appropriately mentioned here. Mercury is in general commercial use in conjunction with a variety of antigens by biologic supply houses for increasing antibody formation in antibody producing animals. Watters has shown that calcium sulphide increases the opsonic index to staphylococci. Mellon has demonstrated group agglutinins for typhoid and paratyphoid bacilli as a result of baptisia administration. He has also shown that veratrum viride increases the opsonic index to pneumococci. Wheeler has produced heightened opsonic index to tubercle bacilli by giving phosphorus to human beings. Hooker has brought about elaboration of agglutinin in healthy human beings, to the typhoid-paratyphoid dysentery group of bacilli by the use of either phosphoric acid, or arsenious anhydride, or mercuric chloride.

prescriptions casually or empirically. Thus they lose the finer distinctions present in two cases of the same disease, and protract or fail in cure, because individualization of drug effects is not carried out.

Individualization a Keynote in Homœopathy

This brings us to the second point upon which the homœopathist of today is insistent, *viz.*, individualization of case. From the time of Hahnemann, homœopathists have emphasized the necessity for special study of the peculiar and particular factors that differentiate two cases of the same disease from one another. Such differentiation is necessary before any homœopathic prescription can be made logically. It is not sufficient to stop with the classification of the diseased state as an entity, such as lobar pneumonia. Such diagnosis is quite essential, and suffices for the application of medicinal therapeutic methods generally in vogue, e.g., in pneumonia, the use of opiates with or without terpene hydrate to allay the cough, the administration of baking soda to alkalize the patient and relieve toxæmia, the use of digitalis to steady the heart, etc. Such prescriptions, while valuable measures at times, take no cognizance of the particular factors acting in each case in contra-distinction to the problems arising in any other. It is into this breach in our therapeutic procedures that homœopathy steps. No two

individuals are alike in form, functional response, mental or physical makeup, psychologic behavior, etc. So completely true is this remark that two people may grow up and grow old side by side and yet differ in each of the above respects, just as the seedlings from one hundred different roses may be furnished with exactly the same soil, rain and sunlight and each develop its own distinctive individual characteristics. The most commonly acknowledged example of such individuality in the realm of the physical is the absolutely distinctive formation of the skin of the thumb or finger, definitely identifying the individual thru its impress upon any markable material. Leathes and Draper have each made a very extensive study of the entire subject of constitutions.

Should we then expect two individuals so dissimilar in health to demand and respond most quickly to one and the same stimulative agent in disease? The homœopathist bases his prescription at least in part upon the constitutional differences that occur and tries to evaluate these, altho ever so poorly, before administering a medicinal agent. This is in hearty accord with the comment of Muchs, "The true biological therapeutics of the future will not be based on the stimulus, the cause; but on the organisms thru which reaction takes place." Or, as Stiegele puts it, "The therapy of Hahnemann fol-

lows the specificity of the disease carrier, after that of the diseased tissue and after that to the disease performance.”

The homœopathist is constrained to apply in the fields of diagnosis and therapy those criteria so admirably stressed in the former field by Dr. Lewellys Barker in an address before the medical students of our own school last spring (University of California Medical School, May, 1930). “The diagnostic problems that confront us today involve more than the naming of the maladies and the recognitions of their anatomical substrata; they include the making of pathologic-physiologic diagnoses, the discovery of etiologic factors, the determination of the series of events that have intervened between the action of causes and their later results (that is to say, the detection of the several links in the pathogenetic chain), the separation of constitutional from environmental factors in the origin of inadequacies of biological adjustments, the reactions of human persons, as a whole, to the situations in which they find themselves, and the discovery of the physical, chemical, psychological and situational means that can be employed to gain and to maintain the highest possible level of vital efficiency of each person examined. That this represents a vast widening of our ideas of the functions of medical diagnosis, all will, I think, agree.” We might

tabulate the things necessary for a complete examination as noted by Barker under these headings: topography (anatomy), pathology, physiology, etiology, constitution, psychology. In actuality none of these conceptions is new. Hahnemann's original schema for the study of drugs attempts to take each of these into account, and it has been admirably amplified to the present day. Thus we study the general makeup (topography) of the individual; the pathological state encountered, the functional alterations, the causative (etiologic) factors, the mental symptoms, the reaction of the constitution to its environment. These make the case; these complete the picture of the diseased state in a particular individual.

When homœopathy is applied to any individual case of disease, it purports to bring that state back to normal thru stimulation of nature's own resisting forces. In order to apply the needed stimulation, we must clearly distinguish the damage done by the morbid agent from the damage reaction, thereby created in the organism affected. We must recognize the symptoms of the invasion and those of the defense. Homœotherapy is specifically aimed at abetting the reaction of defense. To accomplish this, the necessary stimulation has been demonstrably best applied by a therapeutic agent which is capable of altering the normal individual towards

a diseased state or defense reaction similar to that to be treated. For instance, homœopathically, thru oral use and local application, cantharis was always considered a reliable remedy for burns. We know to what a great extent the toxicological skin picture of cantharis is similar to first and second degree burns. It is indeed remarkable how closely, in many cases of burns, the action of pain relief and the regeneration of tissue structure corresponds to cantharis. Two or three drops of the tincture to three to four ounces of water with a teaspoonful of the wine spirit proves a soothing local application.

In other words, in homœopathic prescribing we are concerned with applying a proper qualitative and quantitative stimulus for its action upon the still present functional ability of the tissues to be treated.

The Single Remedy

We must know next, or thirdly, the effects of remedies upon healthy human beings. Sufficient is known to select some medicinal agent in any given case that has produced functional and pathologic changes similar to those present in the particular case under consideration. This substance is prescribed. If more than one such agent is administered we are utilizing therapeutically substances whose combined effects upon body function and tissue

alteration are not known. In other words, single remedies alone are used in homœopathic prescribing.* Let me illustrate: *nux vomica* heightens sensibility of the central nervous system to external stimuli, thereby increasing irritability of the individual to his or her environment. *Gelsemium* deadens the central nervous system to the effects of external stimuli, and simultaneously decreases the reactivity of motor nerves. What happens when the two drugs are applied at one and the same time is not known nor can it be predicted. Such a combination has no place in homœopathic prescribing. Or, again, *codeine* allays the irritation of coughing by a partly central and partly peripheral action, and at the same time decreases the functional capacity of the heart and other parenchymatous organs. What happens when it is combined with a drug like *digitalis*, for instance, which increases the functional capacity of the heart, is not known nor can the action be foretold. A compound of the two, therefore—with present knowledge—would be valueless in making a homœopathic prescription. †

* Of course it goes without saying that a number of substances may be mixed, then given to healthy human beings and experimental animals and the effects of the combination studied. Obviously such a combination is in every respect a single remedy.

† This statement does not mean, however, that both of these drugs may not have simultaneous usefulness in certain forms of heart disease, where palliative therapy is desirable (See Chapter 1).

If homœo-stimulation is to be obtained the agent or combination of agents whose effects are first known, must be administered singly. After all, it is more and more the aim of all physicians to apply remedies singly when possible. The menstrual disturbance which accompanies decreased activity of the thyroid gland, for instance, is best treated by the administration of the substance of that gland, and not by a combination of glandular extracts. The ascites of liver cirrhosis is best met by a single agent stimulating the functional activity of that organ.

It does mean that cure is not likely under such conditions. The fact that the combined effect of two drugs cannot be predicated from the known action of each singly is nicely illustrated by a simple experiment with barium chloride and strychnine. On perfusion of blood vessel preparations in proper concentration, each drug produces vaso-constriction. One might expect summation from the presence of both substances, but instead, vasodilatation results. Rentz, working under Amsler at the Latvian University of Riga, has demonstrated many similar phenomena with local anæsthetics, adrenalin, calcium, barium, and other substances. Again, the secondary blood pressure decrease after adrenalin can be increased by a previously administered dose of ephedrine (Ding). In other words, one pressor agent serves to reverse the dominant action of another—rather than to augment it. Gyorgy and Hertzberg have shown that the blood sugar curve of adrenalin can be altered thru previous sodium bicarbonate treatment (10—15 gm. per os) so that the hyperglycæmia seems markedly weakened and the picture of the second, hypoglycæmic, phase is the outstanding; in fact the first or hyperglycemic phase can be completely absent so that only the blood sugar lowering property of adrenalin is evident. (See phase effects—Chapter VII).

The Minimum Dose

Finally, having selected a single remedy most closely adapted to bringing the diseased state back to normality or health, the homœopathist believes in utilizing this in the smallest possible amount. Just how far the reduction in dosage should go is sometimes a much mooted question. Suffice it here to say that the greater the homœopathic relationship existing between the diseased state and the drug's effects, the less the amount of the agent necessary. Hence, the more we individualize the disease and the effects of the remedy to be employed the smaller the effective dose.*

Summary

1. The common usages of homœopathy in present-day medicine establish it as a therapeutic procedure of merit.
2. This procedure is based upon a principle of nature *i.e.*, that that agent will prove most curative in any given case of disease, the effects of which on healthy human beings most closely simulate the alterations, pathological and functional, found in the sick individual.
3. In applying this generalization, one must

* Needless to say, factors such as age, sex, environment, temperament are also of importance in determination of dosage. These will be discussed in detail later.

- (a) take full account of constitutional peculiarities and environmental influences (modalities).
- (b) use only single remedies.
- (c) administer the smallest amount of the agent selected that will prove effective.

CHAPTER FOUR

THE PHILOSOPHY OF HOMŒOPATHY

“Because practice shall not develop from speculative theories, but theories shall develop from practice.”

—PARACELSUS.

We speak casually every day of life, of health, of disease. What is life? We are aware of it on every side, and perhaps the biochemist has more difficulty than any of us in telling where the inanimate ends and the animate begins. Our every effort to define the thing we call life falls quite as flatly as the engineer's effort to define electricity. Each is only known to us as a force to be described in terms of the activity it causes and controls. Life's activities (as indeed, those of electricity—should one care to carry on the analogy) may be observed under normal or abnormal conditions. To the normal activities of life we ascribe the term health, or *i.e.*, that state of a living thing in which all “its functions are being performed in a perfectly normal relationship one to the other.” When the perfect balance obtaining in health is disturbed, or, that is, when the functions of the various organs and vital processes of an animate object are observed to act inimically, excessively, or

subnormally, then an abnormal life activity results to which we have given the name disease.

Having established a rather flexible norm in this way, it is possible to study disease as any deviation therefrom. Did we know the quintessence of life itself, such a circuitous route, the route of observation, would be unnecessary. It would then no doubt be possible to adjust the diseased state at its origin thru an adjustment of life itself, *i.e.*, of the vital force, power or cause. It is unquestionably the ideal dream of every physician and of every research worker in allied fields such as chemistry, biology, physiology, as indeed of every astronomer, to achieve just that secret of nature. In the meantime, however, two paths lie open to the practical worker in the broad field of medicine. He may attack the problem of disease thru pure observation; or he may approach the subject from the angle of causalism, *i.e.*, search for cause. Or he may combine the two methods. To accomplish the former, he needs keen powers of perception, and ability to record without bias the entire course of biologic events, and the alterations taking place therein as a result of extraneous factors. This is the method of pure fact, and builds no theories of life, and consequently none of health or disease. Such experience admits of certain deductions and generalizations, but it never presumes upon fact, nor speculates about the un-

known. This method constitutes the only true approach to the utilization of the second procedure or search for cause. Unfortunately it too frequently happens that in the search for cause, the completed cycle of events is not studied, and theories grow up like mushrooms.*

* It is impossible to mention all the theories of disease and drug action. Theories of immunity reactions alone are legion. The most prevalent of the last thirty years, somewhat in the order of their appearance are:

- (1) Metchnikoff's phagocytosis theory, which simply assumes that the white blood cells act as scavengers of the body, and combat disease thru their ability to take up and remove morbid agents and toxic products.
- (2) Ehrlich's "side chain theory" or bacterial-anti-bacterial theory was elaborated to explain the apparent specificity of pathogenic agents in their ability to produce definite specific anti-bodies. This theory postulated exceedingly complex molecules, having side chain receptors of a specific nature. As facts in immunology grew, several orders of side-chains were assumed. While the theory still affords a method of approach for study of certain immunologic facts, it has been discarded in the main.
- (3) Nicolle's idea of immunity by coagulation and lysis was advanced to explain some observations differing obviously from those noted by Ehrlich.
- (4) D'Herelle's accidental discovery of transmissible bacterial lysis (bacteriophagia) was for a time inexplicable and offered the final blow to Ehrlich's theory as a universal generalization.
- (5) The interaction of colloids seems to explain the phenomena of precipitation reactions such as occurs in the agglutination reaction noted in typhoid fever. With the realization that drugs, and even the elements, could act as antigens, the

These theories cloud the vision, often intermingling with the facts, and have at the present time seemed to lead research in medicine far afield. As Morse has said, "Speculation concerning 'living molecules' may serve to while away an idle hour, but can scarcely clarify the understanding of the workings of the organism, normal functioning of which it is the duty of the physician to maintain in health."

Homœopathy a Method of Pure Observation

In dealing with homœopathy we are discussing a purely observational method of treating disease. The

subject of colloids and colloido-therapy has assumed a principal role in immunity studies.

- (6) Wolf-Eisner's theory of "altered proteins" embodies the view that drugs act upon tissue protein in such a way as to alter its structure, and thereby cause it to act as a proteid of foreign origin. This is an effort to correlate the old side-chain theory with known facts about colloids.

These various theories to a greater or lesser degree assumed fairly constant stability of pathogenic agents (bacteria). The work of Hadley and others suggests that transmutation of species does occur: "cocci become rods and rods, cocci or spirals; forms of growth change overnight; motility is lost and regained; fermentation reactions are modified by time and opportunity; spore formers become sporeless; hemolytic activity comes and goes; capsulated bacteria lose their capsules; and capsules are gained by noncapsulated forms; antigenic power vanishes and reappears; cultures become spontaneously agglutinative or fail of agglutination; virulent cultures become harmless and harmless cultures virulent."

With the refinements going on in the fields of physico-chemistry and biology, it would seem that much if not all

effects of drugs on healthy human beings are expressed in the simplest language of bedside and laboratory. The indications for drugs in diseased states are made and recorded as etiologic, pathologic, symptomatic and prognostic. These recorded indications, and the manifestations obtaining in the diseases for which these drugs may prove useful show a relationship which is so constant as to have warranted attention as a significant generalization. Mark you, this embodies not a theorization as to the mode of

of the theory cited must actually give way to explanation thru simple physical and chemical phenomena, the application of which to living tissue has been but recently investigated. Such problems as solubility, diffusibility, dissociation, colloidal state, electrical charge, surface tension, chemical affinity and structure, oil solubility, hydrogen ion concentration, atomic weight are involved in the reactions of living tissue. For instance, Beutner believes "every pharmacologic action is ultimately due to a physical change which the drug brings about in the living tissue," and that this change is initiated at least for certain groups of drugs by their ability to alter certain electrical conditions. Traube attributes great importance to surface tension changes. Persson attaches great significance to drugs as catalyzers, and believes this explains in part the ability of minute quantities of foreign substances to initiate widespread changes. I have discussed these physico-chemical influences elsewhere (*J. A. I. H.*, 23:7, 1930) at some length. The above suffices to show how far afield the search for cause, no matter how laudable, may carry the theorist. Theories are none the less valuable in the progress of any science. Extreme care should be used, however, in enunciating them.

the action of the drug or drugs in a diseased state, nor speculation as to the cause of such action, but simply expresses a correlation of phenomena, in much the same way that Farady's law regarding amperage and voltage formulates an electrical relationship. In neither instance are we attempting to enter the realm of the unknown origin or nature of the thing itself.

The homœopathic principle is the tool which enables us to correlate medicinal agents and disease in the production of health. Similarly, one might say, the transformer is the tool which enables the electrician to utilize amperage and voltage in the management of electricity. The homœopathic generalization explains life no more than the transformer explains electricity.

Basic and Determinative Phenomena

The phrase "treat likes with likes" embodies an aspect of the remedial agent* and an aspect of the disease. To apply this rule successfully it is essential to know the general action of the medicinal substance, *i.e.*, the particular tissues or functions upon which it acts. For example, *nux vomica* shows an

*There is a widespread misconception within and without the homœopathic profession that homœo-therapy is a method of *drug* therapeutics. Inasmuch as the ability of living tissue to respond to stimuli depends upon the nature of the tissue, all forms of stimulation, including hydrotherapy, electro-therapy, radio-therapy,

especial affinity for the sensory side of the central nervous system. Bryonia affects mucous and serous membranes. Uranium nitrate will never be useful in nephritis but only in nephrosis. Cactus will never be useful in anginas due to coronary thrombosis, nor will the venoms be useful in the treatment of tubular lesions of the kidneys. Examples of this kind could be multiplied for hours.

Among the best examples of this nature are the findings in the blood. The count, both quantitative and differential, gives clues that are unsurpassed, and

etc., are susceptible of the same analysis as drug therapy. Hence, while the body of our study will draw its examples from the realm of drugs, it must not be forgotten that other remedial agents also exert their action in accord with the principles of homœo-therapy.

The manifestations thru which we recognize diseased states have one of two origins. They may represent the actual damage effects of the morbidic agents upon tissues and functions of the host. Such manifestations are to be opposed (*contraria*). On the other hand, there are other manifestations, which represent the reaction of the organism against the damage done. These processes are to be imitated (*similia*). It is sometimes hard to distinguish one of these groups from the other. For instance, in inflammatory processes, leucocytosis is recognized as a helpful defense mechanism to be imitated; in leukemia, on the other hand, it seems to represent damage to the hematopoietic tissues and is to be opposed. The aspect of the disease, therefore, embodied in the rule mentioned, is actually a complex one, and necessitates recognition of the defense mechanisms to be imitated in prescribing remedial agents. The practical difficulties to be met in applying the principle are quite obvious.

the same may be said of any secretion of the body. The gastric analysis of belladonna is entirely different from that of arsenic, the urine of terebinth different from that of apis, the blood count of colchicum is unlike quinine, etc. This is also true of solid tissues. The percussion or other findings of pathological nature in the chest are entirely different in phosphorus and iodine, antimonium tartaricum and ipecac. The blood vessels in barium are different from those in lead, while the paralysis of lead is different from arsenic. In like manner, it is necessary to know the particular tissues and functions altered by the disease to be treated. For example, pneumonia localizes in the lung, rheumatic fever in the joints.

In applying homœopathy to the actual management of disease we must deal with the actual knowledge to be had about therapeutic substances and diseased processes. This knowledge is derived only by observation. These observations include symptoms, physical signs and laboratory analysis—all the known forms of recording information about the effects of disease or medicinal agents. Now, certain of these manifestations are basic, *i.e.*, present in a number of medicinal agents (we shall chiefly discuss drugs in this connection), and in all cases of disease bearing the same diagnosis. For example one group of drugs may be classified as stimulants, another as depressants, a third as cathartics, a fourth as sedatives, etc. In

like manner, disease may be grouped according to the etiologic, physiologic, or pathologic states present, such as pneumonia, scarlet-fever, rheumatic fever, gout, etc. For practical reasons, the manifestations enabling us to make such groupings may be termed basic. Any drug, indicated in a particular disease, must of necessity have a demonstrably selective action for the functions and tissues affected by the disease to be treated. It would be rather difficult to anticipate results from a remedy in rheumatic fever that was not capable of acting upon serous structures, or of one in peptic ulcers incapable of affecting mucous membranes. In addition to these basic symptoms, common to all cases of any particular disease, and to all drugs which may at one time or another be indicated in that particular disease, we find other signs and symptoms evidencing the reaction of some particular person with the disease. These peculiar or determinative symptoms are present in any and every individual case of disease. Even in epidemics such as scarlet fever, measles, influenza, etc., where the manifestations and course are so strikingly uniform, there will be sufficient individual differences in reaction to attract the attention of the observant physician. Inasmuch as homœopathy attempts to stimulate the individual's resistance to his or her disease, the slight or great differences in reaction of each person are most important guides to the partic-

ular defensive mechanism present in the deranged organism.

In like manner, a study of the effects of drugs, shows individual differences amidst the members of any single group. For example, aloes and senna are both cathartics of the same class. The former, however, produces pelvic and more especially rectal congestion with a tendency to hæmorrhoidal formation, whereas the latter affects the bowel higher up, causing more colic and griping. In prescribing, the homœopathist attempts to distinguish these two drugs upon these as well as other differences, despite the fact that their basic or gross action is the same, and that they would therefore be indicated in grossly similar bowel disorders.

*The Application of Basic and Determinative
Phenomena at the Bedside.*

What I have been trying to say in the above paragraphs is that diseases and medicinal agents may each be grouped into classes dependent upon the organic change and, or, tissue dysfunction they produce. Further, that the manifestations evinced may be divided into basic, or those common to a single disease or drug group, and determinative, or those showing the activity of a given case of disease in contra-distinction to any other case in the same disease group, or of a given drug in contra-distinction

to any other drug in the same classification. Crude homœopathy may be practised if only the basic manifestations are recognized; but results are uncertain unless determinative factors are also known. Permit an illustration with a common disease, lobar pneumonia. As basic manifestations, common to all cases of the disease, we will find:

Chill

Fever

Cough

Dyspnœa

Cyanosis

Lung consolidation

Generalized toxæmia

Blood-tinged sputum

Leucocytosis

Increased serum fibrinogen (marked)

There is no difficulty in making the diagnosis of the diseased condition, pneumonia, to be treated. In prescribing homœopathically, we must consider only drugs which are capable of producing a similar underlying picture in experimental animals or healthy human beings or both. Bryonia, ferrum phosphoricum, iodine, veratrum viride, phosphorus and others fall in this class. Which one of these shall we use? It is perfectly possible to prescribe at random, as it were, and do good. If one fails to individualize the case, however, it is just as possible

to use a medicinal agent that will prove valueless. Each of the above drugs exerts effects which differentiate it from the others. Patients may also differ. Let us distinguish two patients. In Case I, the chill may be quite severe and sudden, the fever moderate (101° - 103° F.), the cough dry, short, painful and at first nonproductive, later accompanied by a moderate amount of "prune-juice" sputum, the leucocytosis high, ranging from 20,000 to 35,000, the consolidated area located in the right lower chest, serum fibrinogen very high. In addition to this picture there will be onset with severe pain in the right lower chest as a result of an acute fibrinous pleurisy over the affected lung area; this will be obviously relieved by lying on the affected side, and will be aggravated by the slightest motion, by coughing, and by deep breathing. The co-associated toxæmia will be evidenced by a dull constant frontal headache, aggravated by the least motion, a mild intermittent delirium in which the patient goes over events of daily occurrence, an extreme thirst for large quantities of cold water and other liquids, a scanty highly-colored urine and a tendency to constipation. Such a picture is perhaps the one most constantly obtaining in lobar pneumonia, and no homœopathist would have difficulty in simultaneously recognizing the effects of the drug, bryonia. Contrast the second patient or Case II, with a much more moderate chill, higher fever (up

to 105°F.), with a short, painless cough, at first non-productive and later productive of a small amount of mucus tinged with bright red blood, little or no pain in the side, cyanosis marked and a similar dyspnœa, leucocytosis and consolidated area. The toxæmia *seems* less severe; the mental state is tranquil, the patient sits propped up in bed without signal distress from motion, and indeed feels that the doctor's visit is hardly warranted for "such a little cold." The cyanosis, however, is even more marked than in the preceding case as the face and hands show a dusky purplish hue. There is no particular thirst. Here ferrum phosphoricum would be indicated homœopathically. The reactions of these two patients to one and the same disease have differed just in so far as their physical and mental make-ups and reactivity have differed. It is hardly logical to subject them both to the same therapeutic stimulus when their ability to respond to stimulus displays such potential difference. The homœopathic rule of treating likes with likes offers us a means of administering precisely the particular type of stimulation needed in each individual case.

Results Under Homœopathic Medication

"Such a method," you say, "is all right if it works in practice." I am loathe to offer comparative statistics, for comparisons are always odious, and

figures can be produced to support or substantiate the efficacy of almost any therapeutic procedure. Solis-Cohen states the case well: "The writer has elsewhere avowed a 'robust faith' in the efficacy of drugs wisely chosen and skilfully used (the right drug, given at the right time, in the right manner and for the right purpose, to the right person). If he had not such faith, he would not have devoted time, thought and labor to this book.

"But it must be admitted frankly that convincing proof of the apparent benefit of medication is oftentimes difficult; and many of the most important data on which proof might be based are as yet obscure.

"The course of wisdom seems to be neither the wholesale acceptance, nor the wholesale rejection, of the reported medicinal utilization of drugs; but the critical examination and evaluation of such reports in the light of pathologic and pharmacologic studies, and finally of clinical judgment—which last, fallible though it be, is all we have to depend on. He that mistrusts it so much that he cannot accept its decisions, should not practice medicine."

Data of all lobar pneumonias hospitalized under other than homœopathic care show a mortality of at least twenty-five per cent. Statistics of all lobar pneumonias hospitalized under homœopathic care

show a mortality between seven and ten per cent.* A study of the influenza epidemic of 1918-19 shows a mortality of hospitalized complicated and uncomplicated cases under homœopathic care of from one to one and one-half per cent., while patients receiving other care evidenced a death rate of approximately ten per cent. Such epidemic diseases afford our only means of presenting even fairly comparable statistics. It might be well, therefore, to investigate homœopathy further by an analysis of the scientific data upon which it rests.

* The figures quoted for non-homœopathic care are taken from standard texts on medicine. Those cited for homœopathic therapy are taken from a survey of records of a number of leading eastern hospitals thru a period of approximately fifteen years, and include some 25,000 cases of the disease. In both instances, the statistics represent hospital figures covering all four types of lobar pneumonia.

CHAPTER FIVE

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY: DRUG PROVINGS

"In the early symptoms of disease lies the key to the foreknowledge of danger."—SIR JAMES MACKENZIE.

Many accidental experiences of nature may be found that exemplify homœopathic principles—the treatment of bruise by massage; the application of snow to a frozen part; the use of radiant heat or warm water on a burned finger; animals licking sores and swallowing the pus; the administration of auto-geneous vaccines; etc.

Needless to say, Hahnemann was the first to adduce scientific proof of the truth of homœopathy. He and his colleagues tested the effects of some ninety odd drugs upon themselves and others, recording the effects in the language of subjective symptoms, *i.e.*, the language of provers, or well persons taking the drug. These records were called provings. It was found that those drugs proved most efficacious in sick people whose symptoms most closely resembled those the drug could produce in the provers. This was a strange coincidence, observed so frequently as to establish itself in the minds of these workers as

a constant basic relationship. It was not long until, from all parts of the world, other men became interested in homœopathy and expanded its literature thru further provings recorded in the same way. These records, indeed, have been carried into such fine detail that many medical men have spoken of homœopathy as the faddism of symptoms, and its followers as "symptom-matchers." As you will recall from our first lecture, when homœopathy was first discovered, little or nothing was known of physiology, pathology, physical diagnosis, or laboratory analysis. Disease was recognized only thru the patient's own story.

Had Hahnemann and his followers had present day facilities they would have undoubtedly done what the homœopathist of today is doing. They would not only have studied and recorded subjective manifestations of drug and disease but would have added all the other knowledge now obtainable. This would have very much simplified their prescribing, as it would have enabled adequate classification of the indications for drugs in diseased states under etiologic (causative), pathologic, symptomatic and prognostic heads. Let me illustrate with the use of pathologic changes. Arsenic bromide, coca erythroxyton, codeine, phosphorus, phloridzin, uranium nitrate, phosphoric acid, iodine (as the element, or as sea kelp, barium iodide, common sponge, and fresh water sponge)—

all possess in common the ability to produce glycosuria, or the ability to cause excretion of sugar in the urine. But they are indicated in quite different types of pathology. The first four produce pathologic changes in the liver and in the islands of Langerhans of the pancreas and lead to true diabetes mellitus. Phloridzin, uranium nitrate, and phosphoric acid exert an especial effect upon the kidney resulting in renal glycosuria. Iodine and its derivatives cause glycosuria thru their ability to alter the function and, at times, the structure of the thyroid gland. With the first and third groups there may or may not be a hyperglycemia or increase in the amount of sugar in the blood. With the second group, the blood sugar remains normal or more frequently is decreased. With these facts in mind, the diagnosis of the right or most similar remedy is made easier as the pathologic changes present immediately preclude the use of a number of remedies in any clinical condition. Think not for a minute that the homœopathist is unaware of these facts or prone to ignore them. Hahnemann was unable to avail himself of them, and hence was forced to stress all the more actively careful study of the subjective material at hand. Those who follow him today are making this data available in relationship to drugs as rapidly as is possible. He used symptoms as the then only available manifestations of disease or medicinal

action, just as we use symptoms, physical, and laboratory diagnosis today as the only available manifestations of disease. In both instances, attempt is made to treat not the symptoms, one by one—as was the practice until recently of the majority of physicians—but to treat the picture of the disease as given by all the data obtainable about it. So careful were Hahnemann's observations, however, that the applications of his provings in the successful treatment of disease constituted the first scientific proof of the homœopathic law of similars.

The Pathologic Physiology of Hahnemann

In the absence of any comparably established anatomical pathology, Hahnemann of necessity had to concern himself with pathologic physiology. He did not unite the disease concept and the remedy, but the remedy and the origin of the disease as it was brought about thru all the possible influences of the external world. More recently in this connection, Wunderlich has said: "We should not ask how does a remedy act against pneumonia, typhoid fever, but how does it act upon a patient who has an infiltrated lung, an ulcerated intestinal tract and in whom the other organs may be in an abnormal condition." Hahnemann had already supplied at least a portion of the answer to this question, and had established the primary basis for a true, scientifically logical

connection between pharmacology and pathology thru his consideration of external disease factors (modalities). As an illustration let us take the modality "cold." Hahnemann asked: Is the damage of the cold due to cold dry winds, or to wetness or to wet-cold weather. In the first case we may be concerned with not only rheumatic but also neuralgic phenomena, in which case aconite would be indicated, especially if we observe as the accompanying chief indication a paræsthesia of the parts involved, frequently also accompanied by a nervous restlessness in the form of great fear. Aconite is spoken of frequently in the literature as an "anti-neuralgic." In the cold due to great moisture content of the air, Hahnemann takes into account the concept of colloidal swelling, for which the rhus or bryonia groups of drugs is indicated. We are, however, able to make a choice between these, as the individuality of the patient is to be given consideration. If his organs of locomotion are affected he will feel most comfortable if allowed to remain absolutely quiet in a self-chosen position; here the modalities are those of bryonia. Rhus would be chosen if the pains are worse in the back, most severe during the night; and relief is difficult to obtain, and then only found by tossing all night.

In like manner, heat damage, as in burns, sunstroke, heat stroke; barometric pressure effects, as in asthma,

certain arthritides, certain vasomotor disturbances; time of year variations, as in chronic eczemas; age susceptibilities, as in the child of "lymphatic diathesis"; all and many others are taken into account in connecting the remedial agent to the diseased state. Although in use by homœopathists for many years, their significance is today just being proven from the standpoint of laboratory analysis. The necessity for due consideration of such factors and their influence upon the subjective manifestations of the individual lead us away from the narrow mechanistic causalism which has dominated medical thought for almost one hundred years. We are gradually establishing a pathology of function, connecting the clinical disease and its remedial agent with the underlying pathology of form. The rather universal move in this direction will do much toward elucidating already well-recorded symptomatic effects of disease and of remedial agents. The exigencies of country practice were no doubt the basis for the well thot thru principles Sir James Mackenzie later enunciated: "That the aim of a doctor is the prevention of disease, that disease is made manifest only by its symptoms, that in the early symptoms of disease lies the key to the foreknowledge of danger." Bier has recently expressed the belief that "Pathological physiology should make up the main part of a good clinical course and should make it fascinating and valuable."

Von Bergemann in his first lecture in Berlin on "Clinical Value of Functional Pathology," carries the thought even further: "The practical request of the physicians forces on us, separated from a consideration of natural sciences to which probably many a form of experimental psychology may belong, to consider the patient medically, if you wish, naively and humanly, and to recognize in his subjective complaints, his experiences and reactions in response to these experiences, especially in the problem of neurotics: the fiction as if a psychic factor was influencing the body. From the viewpoint of natural science this is wrong, we move away from causal thinking if we take such a stand and increase the number of possible explanations, a confusing fusion of which Friedrich Kraus has warned us; but as a physician I cannot do different for the present than to make use of both enlightening sources."

Permit one illustration of how pharmacology may be linked to diseased states thru studies of the pathological physiology of disease and remedy. *Veratrum album* may be used successfully in one of the following states:

(a) Sporadic cholera. Here we find the patient with a profuse diarrhœa, a great deal of vomiting, the picture of collapse, icy coldness, clammy perspiration.

(b) Dysmenorrhœa. The drug is useful in cases which are accompanied by the gastro-intestinal and

general collapse symptoms just mentioned. A permanent disappearance of the dysmenorrhœa has been observed following several weeks of treatment.

(c) Tetany. Stiegele describes a case unsuccessfully treated in other ways, permanently relieved by veratrum. The attacks were characterized by their rather regular recurrence, and the accompaniment of cold, clammy sweat, with symptoms of collapse.

These three diseases, differing widely in etiology and anatomic-pathology, evidence a single united functional pathologic factor—collapse and vasomotor paralysis. Precisely this disturbance is found in veratrum poisoning. The functional change caused by the drug in susceptible constitutions, and that caused by a triad of different clinical entities upon particular individualities probably rest upon changes in all instances in the heat regulatory mechanism or in alterations in calcium metabolism or upon variations in both, so that in any event in the sense of the similar rule the underlying functional change is the same.

The Pathologic Physiology of Today

That the pharmacologic experience of today is beginning to consider individual sensibility in much the way illustrated as above is evidenced by a rather lengthy quotation from Wiechowski: "Especially today where we—as I have expressed myself lately—

are just about to build up a pharmacology of the poison sensibility, therefore a pharmacology which is not concerned with visible functional effects but with effects on the poison and disease-cause-sensibility, it is essential to furnish proofs that the old transferred galenic or if you wish the Pharmaka of Allopathy which form the material of the classical pharmacology at least fundamentally contain nothing foreign to the organization of the suckling, but that the mode of its effect corresponds with that of the ingredients and vitamins; and that also with the opening of new knowledge, the, in theoretical respect always necessary, achievement of the experimental Pharmacology of Schmildberger also practically never will lose its significance. Of course the fact that besides the so far alone observed and studied functional and dynamic action of the Pharmaka, still a second dynamic "static" action, namely, the effect on the poison sensibility of the organ and the organism can be carried out there and perhaps especially is carried out; the interpretation to—and this frequently means the interpretation which can be found in the writings of Hahnemann the founder of homœopathy—that in therapeutic respect especially if therapeutics very narrowly is defined as healing, it does not depend on the visible functional or dynamic or double phasic expressed "poisonous effect" but this is only an undesirable and to be removed side-

condition by extensive dilution while exclusively the healing is found what we now call the static effect or the effect on the sensibility in regard to the disease cause. It may be that this holds true only for the actual healing of a disease however, in the moment of life danger or at that time when it counts to modify or to remove the pain of the disease, the functional or the dynamic action, the trouble causing "poisonous effect," even if it only should be temporarily, never could be overlooked by the physician. At any rate we must admit, through the results of modern times always formed to modesty and precaution in our decisions, that such a static merely to the sensibility directed and thus frequently therapeutically very valuable or frequently only solely to be considered effect may also happen with substances which do not show any visible functional or dynamic effect even in larger doses. Such substances however so far are considered by the classic pharmacology as inert and in as far as they still according to tradition are used on the sick bed, such use had to be considered as useless and the original introduction of these remedies as erroneous. It is remarkable that our therapeutic books are not at all so poor on such remedies as one might expect. Also in our well-informed and rationalistic time the power of medical emperie and the authority of the traditions together with the conservatism was able that the authors of

therapeutic books have used a number of remedies with which the experimental pharmacology is not able to do anything. With a part of the so far scientific investigation excluded and as unnecessary and unimportant considered remedies it was possible to show that we are concerned with substances which not in large doses and by intravenous injection show a functional effect but which had already in the smallest doses a definite static action and were able to change the sensibility of certain organs. We therefore cannot for the future deny substances or drug remedies with which no acute functional effect can be produced not only a pharmacological effect but also especially from the very start a "therapeutic effect."

The trend thus outlined by Wiechowski will undoubtedly enrich the therapeutic field, both by rationalizing certain now empirically employed procedures, and by substituting a few clear cut pharmacodynamic indications for present lengthy, sometimes misleading subjective symptoms.

Muller's Theory of Specific Sense Energy and the Application of Drugs or Other Stimuli

Muller in the first half of the last century has quite briefly intimated the inadequacy of anatomic pathology, and the necessity for recognizing the probable applicability of a single poison to more than

one disease syndrome. "The anatomic lesions due to different poisons are the same or very similar to each other. On the other hand the effects of one and the same normal or abnormal stimulus is different in various organizations." This statement is the logical deduction from his theory of specific sense energy. "One and the same stimulus, acting on different sensory nerves will always produce different sensibility. Different stimulants, different processes of the external world acting on the same sensory nerve will always produce the same sensibility."

Hahnemann's conclusion that a single remedy might be applicable and valuable in more than one diseased state is a logical sequence of the fact that one and the same stimulus demonstrates different effects in different organizations. We have illustrated this point thru the varied use which may be accorded *veratrum*. Conversely, the theory of specific sense energy is illustrative of the fact that more than one remedy may be considered in a single condition; differentiation must be made thru a consideration of the totality of the effects upon the various nerve sensibilities involved. Hahnemann delineated such effects in terms of subjective phenomena; for he had no other available way. Today, while stressing the importance of underlying pathological change, we must still depend upon symptomatology for a recogni-

tion of the finer details of disturbed function. In such connection, the provings of drugs by Hahnemann and his followers offer valuable scientific data.

CHAPTER SIX

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; THE ARNDT-SCHULZ GENERALIZATION; SOME FACTORS INFLUENCING DRUG ACTION

“Associations legitimately applied yield science; illegitimately applied, they yield magic, the bastard sister of science.”—SIR JAMES FRAZER.

The first important laboratory research confirming the seemingly paradoxical homœopathic method of treating disease was begun in 1883, by Schulz, professor of pharmacology at the University of Griefswald. He knew nothing of homœopathic principles at this time, and had had but a casual, almost forgotten personal experience with its practice. He was studying the effects of formic acid on the activity (carbon dioxide production) of yeast cells when he observed that low concentrations of the acid stimulated the growth and budding of the yeast, while slightly higher concentrations had little or no effect upon their activity, and still higher concentrations inhibited growth and budding, or might even destroy the cells. He was astounded and repeated his experiment several times but always with the same

results. The effect of arsenic (arsenious acid) was studied in the same way and similar results obtained. Other drugs and other living organisms were put to similar tests with like results. Thru the use of veratrum album in human cholera he carried his studies into the realm of clinical medicine. Here he found that doses of veratrum totally inadequate to destroy the cholera vibrio in the test tube were quite sufficient to cure human beings of the disease and rid them of the organisms. For several years he drew no conclusions. Finally, after working with a number of other medicinal agents he formulated the generalization that strong stimuli destroy or inhibit cellular activity, while moderate stimuli may inhibit or have no effect upon cellular activity, and still weaker stimuli may enhance cellular activity. However, the behavior of cholera towards veratrum in and outside the body still remained a mystery as did the action of drugs in a number of other diseased states. Now, the clinical disease, cholera, results from the ravages of the cholera germ upon the mucous membranes of the bowel, producing a mucosal inflammation and a generalized toxæmia. Veratrum showed in like manner in large dose an ability to irritate and inflame the mucous membranes, particularly those of the small bowel, and to produce certain general toxic symptoms. Then according to the law of stimuli, just cited, was it not possible—

Schulz reasoned—and, indeed true, that this drug in more moderate amounts should be capable of stimulating precisely the same tissues and functions it inhibited or destroyed in large dose and that the increased activity so initiated made the mucosal surface of the bowel untenable by the cholera germ and thus restored the inflamed tissue to a state of health? Could not then even a common cold be cured by a moderate or small amount of an agent which had a special affinity for the mucosæ of the upper respiratory tract, and which was capable in large dose of disturbing the function or injuring the integrity of these tissues? Experiment found it so. A study of the literature soon showed Schulz that such experimentation had simply led him to homœopathy. In other words, the object of homœopathy is to give in disease a medicinal agent in attenuated amount that in large quantities is capable of adversely affecting the diseased tissues. Indeed, if this were the *modus operandi* of homœopathy, it should be possible to aggravate the diseased condition if too much of such a medicinal stimulus were used. Schulz found, as has every homœopath, that it was perfectly possible so to do. Schulz's generalization then offers a rational experimental basis for homœopathic procedures, and shows how the homœopathist individualizes each case of disease by attempting to select a drug which has a special elective affinity for the

diseased tissues, and is capable therefore in modified dosage of stimulating those tissues in a reaction towards health.

Some Pitfalls in Present Day Research

Schulz's law was a great step forward in elucidating the scientific basis of homœopathy. It fails, however, to take account of the factor of time in the reaction of living tissue to stimulation, and thus fails to explain many subsequently observed phenomena. For example, a certain concentration of arsenious acid in yeast cultures may at first stimulate and later decrease growth and budding. Isolated observations by reputable pharmacologists have differed widely because of the failure to observe the entire course of a reaction following the application of drug or other stimulus to living tissue. As a matter of fact, totally opposite effects have been recorded from the identical dose, and such data has at times been pointed out as showing the fallacy of homœopathy and its principles.

Such widely varied effects may of course have several explanations, such as the type of living tissue on which experiment is performed, the individual susceptibility of such tissue at the time of experiment, the environment at the time of the experiment, the time at which observations were made, etc. These factors can be controlled only partially. But they can

be controlled sufficiently well for ordinary experimental purposes. If we concern ourselves with the time element, and make continuous observation of any biologic effect, many otherwise inexplicable phenomena are shown to be the outcome of certain principles operative in nature. In the last four years, Kotschau has elucidated these most fully, and given homœopathy such strong confirmation from the research laboratory that little seems left to be added of a theoretical nature.

Throughout his work Kotschau pleads again and again for the abandonment of causalistic research until the true course of events themselves is thoroughly studied. Boyd has given some nice examples of the fallacies into which the search for cause may lead us. If one pours hydrochloric acid upon a suitable carbonate, there is an evolution of carbon dioxide gas; the acid *caused* the evolution of gas. If one reverses the procedure, the carbonate may be considered the *cause*. If one brings the acid and the carbonate together under ether, no gas is formed despite the fact that both *causes* are present. If water is now added, gas is evolved and the water may be considered the *cause*. In other words the evolution of gas occurs only under certain conditions, and if one regards the hydrochloric acid as the *cause*, one has indeed only speculated despite the superficial exactness of the experiment.

Again, if one stimulates either of two motor nerves to a muscle, contraction results; *i.e.*, electrical stimulation *causes* muscular contraction. Suppose, however, that one stimulates one of these nerves, and while the muscle is in a state of contraction, passes an electrical stimulus through the other, relaxation results. In this instance electrical stimulation *caused* muscular relaxation. These experiments are quite illustrative of the fact that the condition of the muscle at the time the stimulus was applied plays a part in the reaction obtained. It is mere speculation to consider electrical stimulation the cause of contraction, as the condition of the muscle would appear equally important.

Let us take another example from Boyd. Suppose the output of carbon dioxide from yeast suspension working on sugar is measured and found to be a certain constant. Finely divided charcoal or carbon is now added, and we observe an increase in the carbon dioxide output. Inasmuch as the charcoal was finely divided, and inasmuch as the total number of particles would have in their aggregate a large surface, one might assume that the *cause* of the increased output was the increased surface made available for reaction. Now, however, if the charcoal is filtered off until the highest microscopic magnification fails to find any charcoal, the liquid still increases the output over the original figure,

despite the fact that we have removed the assumed *cause* of the acceleration, namely the increased surface. If one had assumed surface action was the cause, one would have speculated, despite the apparent exactness of the observations made. Another example of widespread application is found in the work of Braun with local anæsthetics of the cocaine group. He discovered that anæsthesia is increased and prolonged when adrenalin is combined with such substances. The common explanation is that the vessel narrowing capacity of adrenalin holds the anæsthetic locally for a longer time than otherwise. In actuality, Rentz has shown that the vessel narrowing capacity of novocain and other members of the cocaine series is changed to vessel widening when adrenalin is simultaneously or subsequently applied. Again, theory fails to cover fact.

Immunology offers an excellent example of how entangling may become the elusive search for cause and effect, where so many unknown variables exist. In this comparatively new field in medicine there have followed in rapid succession, the dogmas of specificity (such as diphtheria toxin-antitoxin reaction), non-specific protein therapy (such as typhoid vaccine or milk in low-grade infections), colloido-therapy (or the use of finely subdivided metallic substances to accomplish what it was thought only protein substances could achieve), and now, protein

equivalent therapy (in which any and all medicinal agents may be accepted as acting in an antigenic manner).

Today, the search for cause has colored research in medicine to a dangerous degree. Kotschau has chosen to call such research casualistic by which he implies the formation of conclusions from insufficient study of phenomena. It is obvious from the illustrations given that such is too often the case. These examples also make patent the fact that many factors are concerned in a study of biological processes.

*Some Factors Concerned in the Course of
Biologic Processes*

Factors concerned in the course of biological processes are of added importance when we wish to ascertain the effects of some extraneous agent upon such processes. Among them are several which warrant mention.

1. The dose or amount. Where large dosages are used, it is possible to neglect or even to exclude a tremendous number of complex conditions which are peculiar to, and belong to the whole problem. The casual or mechanistic causal type of research in common use by present day pharmacologists and biochemists has, for the most part, concerned itself with such dosages. The

smaller the dose becomes and the more the dose approaches those effects which make up and regulate the physiological cycle of living substances, the greater will be the number of previously unknown conditions which no longer play a subordinate role in the end result.

2. The effective agent employed. Most substances have a specific effect. As Rentz says, "every remedy has a constant value in respect to one and the same object."
3. The object upon which the experiment is performed. It is common knowledge, for instance, that belladonna is entirely non-toxic to rabbits.
4. The irritability or reactivity of the organ or organism in reference to the effective agent employed. This is often a difficult factor to control. For example the same dose may differ fundamentally, both quantitatively and qualitatively. Anaphylaxis and idiosyncrasy represent common examples.
5. The medium in which the organ or organisms are contained. Here again, we are dealing with a difficultly controlled and sometimes little known factor. Kotschau cited that Ringer's solution can fundamentally alter the effect of a substance. It is com-

mon knowledge that the administration of saline cathartics alters the reactivity of the human being to phenol-sulphone-phthalein. Urethane or alcohol may have its depressant effect reversed by the application of potassium cyanide or quinine solutions.

6. The functional state of the organ or organisms at the moment of conducting experiment. All the exogenous and endogenous factors influencing it must be given consideration.
7. Time, *i.e.*, duration, of action. For example, perfusion of blood vessels with cocaine at first evinces a constricting and later a dilating action.
8. Whether the drug is entering or leaving the tissues. For example, taraxacum exerts no effect whatsoever upon the isolated heart until washed out. Then the effects usually described for the drug are noticeable.
9. Inability to predict the effect of two drugs in combination. Either adrenalin (1-1000) or alypin (1-1000) produces vasoconstriction. Applied simultaneously there is vasodilatation, or in sequence, the second reverses the effect of the first.
10. Season. For example, fall frogs, high in diffusible calcium, react more vigorously

to adrenalin than spring frogs, which are low in calcium.

11. Synergism of drugs with substances ordinarily having no pharmacologic action. For instance, egg white enhances the local eye effects of cocain about fifteen times.
12. Critical concentration. For instance lobelin on the frog's heart in 0.4 gm. dose is a cardiac stimulant. Below that amount there is no apparent action; above that figure there is cardiac depression.
13. Abstinence effects, *i.e.*, removal of a drug from a tissue stops physiological activity, as in the case of the morphine perfused heart.
14. Time of day. Adrenalin acts more quickly in the afternoon than in the morning, but the beats are distinctly stronger in the morning than in the afternoon and evening hours.

It is obvious from the above that pure observations of the course of biological processes is absolutely necessary before one can attempt to support or imitate such processes in the application of the healing art. It is significant in this connection that the similia principle of homœopathy grew out of such experience and observation. It attempts to explain

nothing, it offers a plan of investigation and, as Kotschau remarks, a plan is just as necessary for investigation as it is for a war.

CHAPTER SEVEN

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; PHASE EFFECTS

"Be prepared to give up every preconceived notion, follow humbly wherever and to whatever abysses Nature leads, or you shall learn nothing."—HUXLEY.

It is quite apparent that the practising physician is confronted at the bedside with an interplay of a large number of conditions, many of which may remain in obscurity despite careful investigation. Unusual reactions in disease and to therapeutic agents must often be catalogued with the hope of understanding in the light of later knowledge. For instance, in some asthmatics the injection of adrenalin is followed merely by relief of the attack for which help is sought, in others a large number of "nervous" phenomena simultaneously appear, while still a third group shows varying degrees of shock. Many otherwise complete misconceptions of pharmacologic effects may be intelligently analyzed by a consideration of phase action. The subject is all the more appropriate at this point as it affords a laboratory study offering far-reaching aid to the proper handling of the homœopathic principle—as indeed the isopathic and contraria concepts—by the clinician.

Definition of Phase Action

By phase action is understood the alterations in the effects of a medicinal agent or other biologic stimulus observable during the continuous presence of the substance or following its application to an organ or organism. For instance, frog blood-vessels perfused with a 1:1000 solution of cocaine show at first a narrowing and then a widening—in other words, a bi-phasic action, with initial activity and subsequent reversal. As representative of such effects from disease (toxin) stimulus, one might mention the decreased temperature and leukopænia of acute peritonitis during the first three to six hours followed by a reversal of effect or increased temperature and leucocytosis.

The Universality of Phase Action

The phenomenon of phase action is so universal that Rentz comments, "There is hardly any poison, or stimulus of any other type, which is not in a position to produce under definite conditions a phase effect not only on isolated smooth muscular organs but also on other objects, even on the entire organism."

The whole matter of phase effects—their relation to biologic phenomena, to disease conditions, and to therapeutics—may perhaps be most easily clarified by

some consideration of a few of the conditions involved in their production:

(1) The amount of stimulus determines the number of phases to be observed in the effect. For instance, psicain in 1:1000 solution perfused into frog's blood-vessels shows only a dilating action, *i.e.*, an uni-phasic effect, whereas in a dilution of 1:20,000 there is at first narrowing, followed by widening, *i.e.*, a bi-phasic effect. In other instances, the amount of the stimulus does not change the number of phases, but reverses or otherwise alters their appearance. For example, veronal in the concentration of 1:1,000,000 persistently narrows the blood vessels of the rabbit's ear; in 1:1000 dilution there is vessel widening (Lepper). With calcium chloride in 0.007 per cent strength, or above, there is at first depression and then excitation of the intestinal musculature of the rabbit, cat or guinea pig. In concentrations below that mentioned, the same phases occur but their order is reversed. Chloroform on the rabbit's heart in a 1:1,000,000 strength evidences at first an increased and then a decreased amplitude; while a 1:10,000 concentration produces the same phases in the reverse order.

As a general rule it may be stated that most poisons are double and polyphasic only in very definite middle concentration, while small and large amounts, respec-

tively, are primarily uni-phasic and have an opposing action to each other.

(2) The condition of the experimental object at the time of introduction of the medicinal agent is rather obviously of importance in determining the course of an effect for "the action is upon the colloidal structure of the cells, through influence upon the ionic conditions in a physico-chemical manner." For example, adrenalin (1-1000) constricts initially only the normal vessel, and not the traumatized, on which a widening effect is first observed. The muscle in relaxation is made to contract by electrical stimulation; while relaxation occurs if a second stimulus is applied during the height of contraction.

This emphasizes thru laboratory channels what should be thoroly understood by all at the bedside, namely: the necessity for determining as closely as possible the functional state and capacity of the organism to be treated. According to Fromherz, the hypophysis preparations, independent of the kind of animal, nutrition, narcosis and type of injection, have in the first phase a diuretic-retarding effect, in the second a true diuretic effect. But Kishi has found that the manner of the observation, the experimental order, and the condition of the animal (toads and rabbits) determine which phase is outstanding in appearance. He often finds a first and third anti-diuretic phase and a second and fourth diuretic phase.

With adrenalin, the pregnant cat uterus is stimulated instead of retarded.

Antipyretics lower temperature in fever, but have no effect upon normal temperature. Zih has found that splenic extract causes an increase in erythrocytes in animals with less than six million blood cells, and a decrease in those with more than six million.

Kotschau has shown the markedly increased effect of papaverine hydrochloride upon intestinal musculature when deprived of oxygen. Caffeine is a vasodilator, but constricts the vessels in an area of inflammation. Gottlieb states "experiences with other smooth muscles lead us to conjecture that the effect of stimuli which promote and inhibit depends in large measure upon the state of the organ involved, *i.e.*, upon the prevalent tonus of its musculature." Of course, the amount of stimulus or dose still remains a factor, for, as Kotschau has shown, morphine hydrochloride 1:1000 causes only a depression of tone when the muscle tonus is originally high while a 1:100 caused mostly a marked increase when the tonus was high. Boyd has based a rather flexible and valuable definition of homœotherapy upon a due consideration of variations in tissue susceptibility in health and disease: "Homœotherapy is a therapeutic method which assumes that a deviation from the functional mean within reversible limits can be re-

stored to normal by means of stimuli, usually applied in the form of drugs, only small doses of which are necessary because of hypersensitivity in disease and whose action is always directed toward normal by virtue of altered receptivity of tissue to stimuli in disease."

(3) Fatigue or previous damage influences the course of reaction. Digitalis is most useful in cardiac disease in the presence of chronic passive congestion and fibrillation.

(4) Differences in reaction of different organs to the same agent. For example, barium chloride (1:1000) produces vessel narrowing in the rabbit kidney (Sakussow), but has no effect upon vessels of the guinea pig uterus (Frohlich and Paschkis). Strychnine (1:1000-30,000) produces initially narrowing of vessels of the rabbit's ear, but widening of the splanchnic radicles. (Amsler and Pick.) Not only do different organs, such as uterine and intestinal musculature, vary in their reactivity to the same dose of the same drug, but also different portions of a single responding system may show different results. For example, the blood-vessels show a decreasing sensitivity to the vaso-constrictor effect of epinephrine in the order named: mesenteric, splenic, cutaneous, renal, pulmonary, coronary in man and monkey, cerebral, voluntary muscle arterioles. Stated more concretely,

0.1 cc. of a 1:1000 solution of epinephrine intravenously in a cat causes constriction of the arteries of the intestine, has little effect upon or causes slight dilatation of the arterioles of the lung, and causes frank dilatation of the muscle arterioles.

These examples show the necessity of closer observation of the effect of medicinal agents on the body as a unit, rather than the acceptance of an action as universal because found so on a single organ.

(5) We are quite aware of the variations in phase and other drug effects to be encountered in different species of animals. For instance, in man adrenalin at first retards the gastric movements and later on furthers (Danielopolu); we find that the movements of the dog's stomach are influenced in the reverse manner (Watanabe). Hypophysis extracts provoke a diuresis in cats and dogs but oliguria in rabbits and guinea pigs (Houssay).

Macht has found, while working with alkaloids, that those drugs or toxins derived from plants were highly toxic to animal tissue, and vice versa, toxins derived from animals are more toxic to plant tissue than to animal tissue; for instance, codeine is toxic to animal and comparatively little toxic to plants. Epinephrine proved more toxic to plants than ephedrine, and ephedrine to animals than epinephrine.

(6) In warm blooded animals the temperature of the poison solution may be of importance in altering effects. Digitalis effects are altered or lost with even moderately increased temperatures. The reaction of warm-blooded animal vessels to cocaine and strychnine in the release stage, is more distinctly expressed by a liquid of body temperature flowing thru the vessels than one of room temperature. (Schkawera.)

(7) Thru repetition of poisoning and washing out and re-poisoning, it is possible to get a reversal of the washing out effect. Sakussow has found widening of the vessels of the rabbit kidney when treated with chloral hydrate 1:100. This gives way to vessel narrowing on being washed out. If the experiment is repeated on the same preparation, upon washing out, there is often reversal of the narrowing to widening.

(8) Poison concentration plays a part in both the type of effects produced and in the order of their occurrence. The type of effects produced pharmacologically with any substance—so far as is known—will follow the Arndt-Schulz Generalization. Popoviciu and Martinescu were able to alter the sequence of events (or phases) in the frog's heart when poisoned with a chloride, or eserine, or adrenalin, or pituitrin, or thyroid gland extract, by varying the concentration of the poison in the perfusing fluid.

They found that larger amounts of the poison strengthened the retarding phase of effects at the expense of the furthering phase, while weak concentrations supported the furthering. Certain middle dilutions were able to change the order of the effects or phases without increasing their number.

(9) "Abstinence appearances," or the effects observable upon suddenly removing a drug, may rightfully be included in the factors which influence the course of events following administration of a medicinal agent. Thus, after long use of morphine, nicotine, or strychnine on the isolated rabbit heart, Krawkow, Beresin and Lagowsky, respectively, have found that the washing out causes cardiac damage, even standstill; if the poison is reintroduced the heart activity again improves. We are all familiar with the unpleasant, sometimes serious, symptoms attendant upon too sudden removal of morphine from the addict, or of alcohol from the case of pathological inebriety,—both of which effects are best relieved by "tapering off." It is interesting that the abstinence symptoms by withdrawing tobacco may be equal to those, which usually become apparent as the direct consequence of tobacco smoking and which are expressed by a temporary decrease of the exactness of coordinated movement and conception process (Carver). The effect of digitalis (temporary decrease of the beat volume and the frequency) after

cessation of the poison also repeats itself (Burwell et al).

(10) The effect of a drug may be reversed by a change in its concentration from a higher to a lower or vice versa. Rentz has demonstrated this with a number of the anæsthetics of the cocaine group. For example, the markedly constricting effect of alypin in a 1:1000 dilution upon normal blood-vessels gives way to vasodilatation when the concentration is suddenly changed to 1:2000, or 1:4000; contrariwise, vasoconstriction supervenes if a 1:1000 concentration is substituted for one containing less drug. (See Fig. No. 1.)

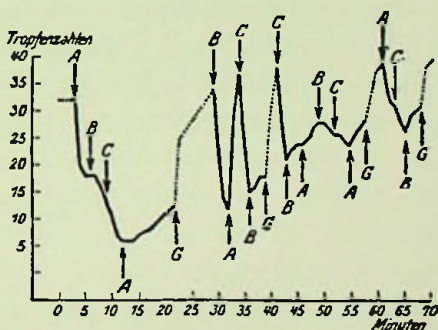


FIG. 1

Qualitatively different effects of equal alypin concentrations on the isolated frog vessels in dependence upon the previous concentration. A = alypin HCl. 1:4000. B = Alypin HCl. 1:2000. C = alypin HCl. 1:1000. G (—) = Gotth's solution. (After Rentz.)

(11) Effects of medicinal agents are influenced by the rapidity of their attack upon living tissue.

Alternation of activity (*i.e.*, phase effect) is best produced by sudden application of stimulus, whereas a gradual "switching in and out" of the stimulus may afford no demonstrable change or be recognized by a gradual monophasic activity. The action is comparable to the wave effect set up when a stone is thrown into the water—or *suddenly* lifted out—on the one hand, and, on the other, the very *gradual* lowering or raising of the stone, attended, as it may be, by no grossly appreciable disturbance on the water's surface.

(12) It would almost seem axiomatic that one stimulus or medicinal agent would artificially influence the action of any other. It is possible for one drug to influence both the character and number of the phases of the action of another. For example Burridge states, that the initial decrease and subsequent improvement of the activity of the isolated frog heart under the influence of many poisons becomes so much more distinct, the less the calcium content of the perfusion liquid. Calcium excess on the other hand retards on the frog heart, according to Popoviciu et al, all phases of adrenalin, eserine, pituitrin, and thyroidin action, while potassium in excess, increases the furthering phases of these drugs. The stimulating effect on the rabbit intestine, of morphine, cocaine, caffeine, and camphor becomes stronger, if the calcium content in the nutrient liquid is increased.

A great diminution of calcium causes a reversal of the effect of the drugs mentioned so that in the place of stimulation paralysis is predominately observed.

Kylin reports that the blood pressure increasing phase of adrenalin effect by means of calcium and the blood pressure decreasing effect by means of potassium may be increased. The blood pressure increasing effect of adrenalin is augmented by greater blood alkalinity and lessened when hydrogen ion concentration increases.

The initial increase in hypertonia in voluntary musculature by atropine can be lessened by a previous dose of adrenalin in such a manner that merely the depressing effect (hypotonia) appears.

According to Zondek and Ucko it is possible thru the addition of calcium or magnesium chloride to weaken the blood sugar lowering effect of insulin and even make it disappear and to increase the blood sugar increase of the second phase so that this appears as the important effect of insulin. Also Kylin observed a lessening of the blood sugar lowering effect of insulin thru calcium chloride and on the other hand an increase thru potassium chloride.

Variability of reaction to certain substances on the part of the entire organism may doubtless be predicated upon alterations in normally fairly constant tissue constituents. For example, we have mentioned that the pressor action of adrenalin is increased by

alkali and decreased by acid (Collip). MacNider has shown that the resistance of the kidney to anæsthetics is augmented by increased alkali and decreased by the addition of acid. Nicotine in alkaline medium causes a fall of blood pressure and slows the pulse; conditions are reversed in the presence of acid. Salant has shown great variation in the action of mercury, pilocarpine, atropine, epinephrine, and digitalis as a result of calcium overfeeding or starvation. Mercury ordinarily causes slowing of the respiration; in the absence of calcium, there is stimulation. The toxicity of mercury is increased if the organism is deprived of calcium or if one of the calcium antagonists (potassium or magnesium) is given. In calcium deprivation, pilocarpine produces an original fall of blood-pressure, followed by the usually initial rise (phase inversion). The action of digitalis may be increased as much as one hundred per cent by precipitating or otherwise removing calcium.

Such influencing of phases of the action of one agent by that of another in some instances certainly has more than theoretical value. For instance, thru the application of non-specific antigens (omnadin), the organism becomes capable in cases of infection of mobilizing within an hour enormous numbers of leucocytes and phagocytes while the initial leukopænia otherwise yields to leucocytosis only after about six

hours (Kuroda). Again the excitement stage of narcosis and the occurrence of such events after the cessation of narcotics can be avoided or made trifling by the employment of a mixture of 6 parts of amyl nitrite and 1000 parts of ether (Winkler).

(13) The time of the year is not without effect. Fall or full-grown frogs high in diffusible calcium react much more vigorously to adrenalin than spring frogs. As a clinical illustration, Vollmer has shown adrenalin normally changes the Ca:K relation of the blood and the tissue, so that the continued effect passes thru a first phase corresponding to rickets into a second corresponding to tetany. In like manner the "hormonal spring crisis" which changes rickets to tetany and is associated with a marked acceleration of metabolism, is readily understood inasmuch as we are already dealing with calcium (Ca) poor organs. A number of remedies found in the repertoires capable of showing seasonal variations in their action would seemingly depend upon definite alterations in physiological mechanisms as illustrated above. We may mention the heightened susceptibility of organisms in winter to aurum, nux vomica, calcium, iron, potassium phosphate, phosphorus, and strontium. In like manner there is a tendency for onset or aggravation of potassium bichromate and fluoric acid (also in winter) conditions in summer; of rhus toxicodendron conditions in autumn; and of

lachesis, lycopodium, and pulsatilla (also in summer) effects in spring.

The subject of seasonal variations in biologic activity introduces the entire subject of the periodicity and rhythmicity in animate and inanimate objects. The importance of the recognition of rhythmic processes is well emphasized by Rentz' discussion: "Rhythmic appearances in nature are wide spread. Most biological processes have a rhythmic course. There are rhythms, the waves of which run over a period of years and those whose whole course lasts only for seconds or minutes. Brown, Pearce and Allen report weight deviations of the endocrine glands, as well as the lymphoid organs and the liver which run over a period of years. A classification of the significant year deviations for the human physiology and pathology are found in Beckmann. Especially do we refer to the oversensibility of the vegetative nervous system in the spring found by Moro. Fliess believes, based upon sufficient material, to be able to prove in all living processes, normal or diseased, physical or psychic, animal or plant, periods of between 23 to 28 days. According to Rowe and Eakin the metabolism of the human body shows monthly deviations. The same has been observed by Moore and Cooper in regard to muscular power, heart activity and respiratory frequency in the female. According to Jackson, Aage and Palsberg, the NaCl

content of the blood in one and the same experimental person varies in periods of several weeks. Allen believes, that the peculiarity of the central nervous system called by him neural oscillatory effect can also be recognized in greater time intervals as a regulating principle (night rest, Sunday rest). According to Voelker, periodic deviations of certain nature (body temperature, blood pressure, gas exchange, urine secretion) are based upon a number of bodily functions during the course of the day. Also the base change (Borstein and Voelker), the urine acidity (Muschat), phosphoric acid (Broadhurst and Leathes), acetone (Hubbard and Wright), and creatinin excretion (W. Schulz)—furthermore the hæmoglobin of the blood (Rabinovitch), its NaCl content (Boenheim), the number of white blood cells (Sabin, Cuninghame, Doan and Kindwall) and the thrombocytes, (Kranzfeld) the size of the red blood cells (Price-Jones), etc., show daily deviations. As Voelker, Muschat, Campbell and Webster, Shaw, Broadhurst and Leathes, stress, the life-requirements (nutritional intake, sleep movement, bodily exercise) should not be made responsible for these variations. Of significance may be the type of the animal and its age. Thus Szymanski differentiates monophasic animals (man, birds, goldfish) with one and polyphasic animals (nursing, dog, cat, mouse, etc.,) with more than one activity—and rest period within 24

hours. According to Boldyreff, we observe in the human as well as in the animal besides the digestion intervals of $1\frac{1}{2}$ to 2 hours, a periodic secretion of pancreatic and intestinal juice, as well as of bile. The secretions are accompanied by strong rhythmical contractions of the empty stomach and the small intestine. The juices enter the blood during the "working period" in which a periodic appearance of proteo-, lipso, and amylo-lytic ferments, of fibrin ferment and catalase easily could be proven. At the same time with the ferments there could also be observed a decrease or an increase of the leukocytes. The periodic activity of the digestive apparatus forms a foundation for the periodic function of the entire organism. Rhythmic contractions lasting for about a minute of the smooth musculature of stomach, intestine, bladder, scrotum, penis, uterus, spleen and vessels have been observed by Weitz and Vollers. In regard to rhythmic movements of the warm and cold blooded animals, one should consult Rothlin. Urine is rhythmically passed into the urinary tubules (Ellinger and Hirt); also the glomeruli (Krause) probably open and close rhythmically. The fact also should be mentioned, that during the development of the sea leech, lipid (hemipermeable) and albuminoidal (permeable) conditions of the plasma-membrane are produced periodically (Herlant). Also Faure-Fremiet states, that the lipoidal substances of

eggs of *Sabellaria* seem to change rhythmically with the stage of maturation and division.

We should still especially stress, that differently quickly running rhythms may be superimposed by each other. Thus according to Alvarez, weak rhythmically running variations of tonus add themselves to the peristaltic movements of the intestinal tract. The periodic daily deviations of the number of leukocytes in the human and in the dog according to Shaw can be dissolved into numerous small waves. Considerable changes could be observed every 15 minutes and then not only in the peripheral blood, but also in the vessels of the various parts of the intestine. Also the vessels do not merely show one type of variation. With the aid of the plethysmograph, Uhlenbruck was able to observe volume changes of the extremities, which resulted from the tendency of the vessel centers to rhythmical activity and which are supposed to correspond to rhythmic deviations of respiration observed during sleep. According to Uhlenbruck, to these also belong the Sigmund-Mayer waves.

"The life processes in the plant world also permit the recognition of many rhythmical variations. Stoppel has reported about those which occur once during the course of the day. Maximow and Krassnosselsky-Maximow were able to observe in assimilation experiments with oats, soja and wheat,

that the photo-synthesis has a jump-like course. After a short increase a short decrease follows, etc., The authors bring these events into connection with periodic changes of the width of the openings. According to Kohler, alcoholic fermentation is also a rhythmically running process in that alternately a retardation is followed by an increase.

“Periodic processes are also found in lifeless substances. We recall the rhythmic formation of the Liesegang rings in colloids and the so-called “Pulseroids” of Bredig, by which one understands the curve-like represented periodic formation of oxygen after overlaying mercury with hydrogen peroxide which appearances, according to Somordinzew, recall very well the well known periodic change of activity of most ferments and can serve as their model. Also Kopaczewski and Szukiewicz as well as Lille and others find analogy between periodic reactions of inorganic symptoms and periodic processes.

“Similar to the artificially produced phasic effects through various interferences are also the natural rhythmical events on the various substrates, frequently even on the same one on which they take their course. Also according to the nature there is a great similarity of the two appearance forms. Thus Iwanow and others found, in studying the periodic movements of the empty stomach of healthy

individuals after the working period, frequently a shortly lasting complete relaxation is observed and not merely a 'normal' contraction state. Corresponding to the v. Uexkull's law during muscle contraction the corresponding nerve center is 'less irritable than normal,' but if the muscle relaxes, then the irritability of the center becomes increased. According to Isayama after swallowing, the irritability of the corresponding center is increased. These events recall, for instance, the 'supernormal phase' of recovery observed after CO₂ poisoning or electrical stimulation of a nerve. Physiological periodically recurring processes of different kind, as for instance those leading to menstruation also remind us of phase events, which can be produced through artificial interference. Thus pulse and temperature decrease during the period, however, shortly before this they show an increase. Cullis, Oppenheimer and Ross-Johnson and Schick observed, that flowers which have been handled by menstruating women soon fade; at the beginning and end of the period a stimulating influence seemed to be present.

"Adrenalin, hypophysin and other substances as well on the isolated organ as on the total organism are able to not merely show two, but even four and more effect phases. We, therefore, have so much more to look over the assumption of certain and indeed other points of attack for every phase and to

credit them with the same effect mechanism, as the natural or 'spontaneous' rhythmic-periodical appearances. At any rate the largest part of the observations in regard to the phasic effects (to these belong, above all, those, which stand in connection with the vegetative nerve system) seem thus best viewed.

"Ions also rule reversible ferment reactions and determine their direction, that is, whether building up or down follows (Embden). All types of stimulants (electrical, mechanical, thermic, chemical, optic and acoustic) are able thus to change the relation of certain electrolytes on the surfaces, that stimulation respectively retardation occurs. This holds for nerve preparations and especially also for the sensory organs (Lasareff). But stimulation is according to Hober a pure membrane process, which is supposed to run hand in hand with the increase of the permeability, or, as Heubner says, with a loosening of the biocolloids. The membrane is permeable for ions and is called 'ion sieve' by Hoeber. Every electrolyte during the life of the organism has a definite significance. Every ion has a characteristic significance upon every organ, 'and every organ has its own ion balance.' Pathologically changed cells have a changed ion balance (Spiro). Especially must there be disturbances in the electrolytic system in every disease, which has to be referred back to irri-

tability changes of the vegetative nervous system (S. G. Zondek).

"In order not to become lost in hypothesis, we limit ourselves to what has been said, according to which it appears possible, that a stimulus is in a position, to produce on one and the same substrate certain independently running rhythmical-periodical processes.

"In conclusion we may say, that it is probable, that phase effects, similar to the natural rhythmical appearances in the biological world, are in connection with changes of the colloidal structures, regardless of whether we are concerned with effects on the total organism, on the isolated organs, on lifeless organic or an inorganic substrate. Everywhere, where absorption, ionization and hydration may occur, there also phasic or rhythmic effects may be possible. Many effects appearing after an interference of phasic course can perhaps be considered as a consequence of the awakening or the strengthening of a usually inactive or only weakly expressed activity of the organism or colloidal substrate in general, to a rhythmic activity. At any rate the artificially produced phasic effects are in general subjected to the same principles and follow the same mechanism, as the 'spontaneous' or natural rhythmic periodic appearances."

*Some Benefits to be Derived from a Recognition
of Phase Effects*

A recognition of phase effects and of the various factors influencing their occurrence, magnitude, order and course, would seem to be of prime importance for the further development of pharmacology. In the past, the effects of a substance have been determined largely according to the results of the most pronounced action. Thereby have been overlooked many important factors, and, as Rentz says, "it seems to us that one does not know a drug or poison at all as long as he has not examined it in regard to its phasic functions." Apparently contradictory statements in the literature are the outgrowth of a lack of knowledge of such effects. To correlate them and to ascertain the entire range of action of the stimulus, it is necessary to test substances on different objects and in different concentrations uninterruptedly and for a longer period of time than is usual in most pharmacological laboratories; eventually, also observing the washing out effects. As the previously enumerated conditions show, one or another of the action phases is predominate, dependent upon what stronger or weaker physico-chemical pre-condition the cell or tissue meets. For instance, the contradictory statements relative to the effect of hypophysis preparations upon diuresis depend for their explanation

upon proof produced by Fromberg that thru certain changes of the experimental conditions the one or the other of the phasic effects of the hypophysis preparation can be produced. Schubel and Gehlen have shown that quinine at first depresses and then stimulates uterine movements, thus settling the contradictions of the literature. In other words, too much attention has been paid to large or overwhelming doses and single observations. Phase effects emphasize the importance of studying various concentrations with uninterrupted recording of effects.

A recognition and analysis of phase effects enables the better understanding of certain colloidal phenomena. Based upon his experiments in regard to the swelling of the serum albumin under the influence of caffeine, Scoloczey comes to the conclusion that the second anti-diuretic phase of caffeine is explained by the fact that, after the excretion of the substance, the colloids of the organism for some time hold water beyond a normal value, therefore less of it is excreted as compared with normal conditions. Such a colloidal effect mechanism can be supported for many diuretics by a consideration of their phase actions. Adrenalin, insulin, hypophysis preparations, purine derivatives, pilocarpine, novasurol, digitalis bodies, calcium and strontium salts, sodium chloride, etc., are capable of influencing diuresis bi-phasically and even polyphasically. Under certain conditions, it

therefore follows that the retention period can overbalance the diuretic phase and thus defeat the clinical success of the agent.

More than one of the phases of the action of a substance may be therapeutically valuable. In its first phase, adrenalin acts as a cardiac stimulant; in its second stage, blood phosphorus levels are increased thru retention of the same.

A recognition of phase effects finds expression in the "hormonal equilibrium" of the body. (See Chapter VIII.)

It is perfectly possible to influence phases artificially. It has been hinted above that thru suitable combinations of remedies one may suppress many damaging phases, while many therapeutically valuable ones may be furthered. For instance, one hesitates to oppose the negative phase of invasion of an osteomyelitis with the negative phase of a surgical procedure for fear of summation of effect with early death; rather does the surgeon wait for the positive phase of body reaction to the invading process and then apply the negative surgical phase with removal or drainage of the entire inflammatory area (Budde). The pressor action of adrenalin on the blood vessels may be furthered by the simultaneous application of calcium, while the second phase of its action (blood pressure decrease) may be supported with potassium.

Of practical importance is the relationship of dosage to phasic effects. We may recall that polyphasic manifestations are demonstrable chiefly with medium concentrations or amounts, while favorable *uni-phasic* effects are to be found with greater attenuations and unfavorable *uni-phasic* effects with larger amounts. In other words, medium concentrations intermingle favorable and unfavorable phases; strong concentrations usually show only unfavorable influence. So, "in order to avoid damaging phases it is recommended to give *frequent small amounts* of poison." (Rentz).

Kotschau most lucidly demonstrates the relationship of phase effects to one prescribing homœopathically in experiments which show that an altered functional state is most quickly brought again to normal by any agent in small amounts, the effect of which in large dose would aggravate the disability already present. Chloral hydrate in ordinary dose acts as a sedative decreasing the tone and pendulum movements of intestinal musculature; in lesser concentration, an already depressed strip of musculature is gradually restored to normal tone and rhythmical activity. Clinically, we improve the shock and gastro-intestinal picture of cholera by the use of veratrum which, in toxic dose, is capable of producing or aggravating the cholera syndrome. Kotschau has so fully analyzed phasic effects in their

relationship to the homœopathic principle in therapeutics that some mention of his work and conclusions in detail seems not amiss.

CHAPTER EIGHT

THE SCIENTIFIC BACKGROUND OF HOMŒOPATHY; KOTSCHAU'S TYPE EFFECT HYPOTHESES; SPECIFICS IN MEDICINE

“. . . The ultimate court of appeal is observation and experience, not authority.”—HUXLEY.

Some experimental work has led Kotschau to the elaboration of certain hypotheses by which he attempts to demonstrate and classify the course of biological processes in general and which at the same time offer a means of recording the effects of medicinal agents upon such processes. These he calls collectively the type effect hypotheses. He by no means pretends that they are final or conclusive, but considers them a working basis for a further and better conception of the behaviour of living organisms under varying endogenous (*e.g.*, hormonal) and exogenous (*e.g.*, drug) influences.

Kotschau's work suggests that the course of biological effects may be classified into three distinct types according to the character of response noted. If the time element of an effect is represented by the abscissa and the height of biological response

by the ordinate, a small dose will produce a weak monophasic effect (Curve A in Kotschau's diagram—See Fig. No. 2); a medium dose, a double phasic curve with a stronger effect at the beginning followed by a reversible depression (Curve B in Fig. No. 2); while a strong or very large dose causes a short, very intensive effect followed by irreversible injury (Curve C in Fig. No. 2).

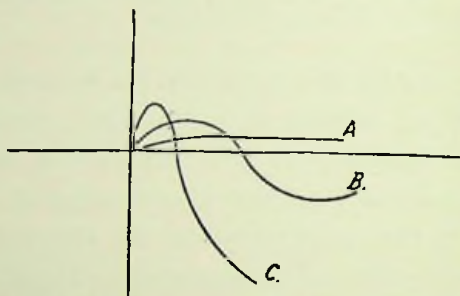


Fig. No. 2. Kotschau's Type Effect Hypotheses.

Illustrations of the Type Effect Curves

A few illustrations of the effect schema of Kotschau may serve to fix it in our minds:

1. Tanaka found the blood clotting time at first increased by adrenalin in moderate doses and then shortened (Curve B); while small amounts of adrenalin merely have a shortening effect (Curve A) and the larger ones merely a lengthening effect (Curve C; if dose sufficient, Curve C).

2. After atropine administration, the blood sugar at first increases and then strongly decreases for a temporary period (Curve B—Lang and Vas).

3. Jonkhoff finds that one mgm. of picrotoxin per kg. of body weight produces after temporary paralysis an increased irritability of the labyrinthine reflexes which lasts for days (Curve B). Small doses act upon the reflexes merely in a furthering (Curve A), large ones merely in a retarding meaning (Curve A).

4. In small doses ($1/16$ to $1/10$ gr.) Macht has found morphine produces in the human body a shortening of reaction time, which after thirty minutes is followed by a slowing of reactivity (Curve B); an increase of the dose ($1/8$ to $1/4$ gr.) decreases the length and severity of the first stage, and increases the second (Curve B). This experiment incidentally illustrates our ability to magnify one of the actions of a drug, while minimizing other effects.

5. Effects of morphine upon the blood offer clear cut examples of the type effect hypotheses. Immediately after subcutaneous injection of $1/6$ - $1/3$ gr. of morphine into the human body, we find regularly an acidosis lasting 1-4 hours, which later on goes over to an alkalosis which frequently is present for 24 hours (Curve B). The urine reaction changes correspondingly. With smaller doses after 20 minutes there was a slight compensatory alkalosis lasting about $3\frac{1}{2}$ hours; the acidotic phase was very slight

(Curve B) or did not occur at all (Curve A). The blood sugar increases under morphine at first and then temporarily decreases below the normal (Curve B). The amount of phosphates in the blood is decreased thru morphine addition in the first two hours, later on increases again for a few hours above the original value (Curve B).

6. Macco and Formicola by the use of alcohol in small doses at first were able to observe an increase of the dehydration process in the muscle tissue of the frog, then a decrease (Curve B), after large doses, however, a temporary decrease, which is followed by an increase (Curve B). This example demonstrates another important clinical point, *i.e.*, that it is possible by regulating dosage to reverse the order of appearance of phase effects, and thus to further one phase or form of action at the expense of another.

7. Hutchinson has found that, while concentrated solutions of adrenalin (0.002-0.003 per cent) temporarily retard the respiration of animal and plant cells (frog muscles and radish seeds), dilute solutions produce a rhythmic effect; the carbon dioxide production decreases, increases, then decreases once more and finally increases again. This, in effect, illustrates the B Curve of Kotschau as well as the polyphasic action Rentz finds so common with "middle doses" of medicinal agents. It illustrates the phenomenon of

rhythmicity which has been previously mentioned, and which Rentz explains thru many natural occurrences as an example of the simultaneous working of the le Chatelier principle and the law of inertia.*

Clinically, this is of importance, for, as shown above, a second stimulus may be so applied as to

* Briefly, the le Chatelier principle is, "Every external influence evokes in a body or system an alteration in such direction that as a consequence of this alteration the resistance of the body or the system against the external influence is increased." If one brings this principle into relationship with the law of inertia, the oscillatory character of biological organic response ("the ever-present battle for balance") is readily understood. Rentz makes the whole matter very clear: "On the basis of simple examples we shall now attempt to prove the validity of the law of the pendability in biology. Vladesco administered to experimental animals glucose and afterwards tested their blood sugar content at definite intervals. The latter at first increased and then decreased below the original point, to once more increase, etc., until finally the normal was again reached. The increase of the blood sugar which surpasses the usual deviations produces, according to the principle of le Chatelier, a stimulus, to which the organism reacts correspondingly, with the remedies which are at its disposal, that is, a decrease of blood sugar will be observed. This decrease, however, does not cease if the initial sugar value again has been reached but the process goes on gradually losing in intensity, corresponding to the law of inertia. Provided that hereby the lower physiological limit of the blood sugar value is passed over, the hypoglycæmia now, provided the organism is sufficiently sensitive, acts as a stimulus and this time the counter effect of the organism will be expressed in a blood sugar increase, which also can pass over the normal. In the examples mentioned here it is the over normal rapid increase of a blood sugar constituent which produces the variations. The one phase must follow the other. Every further one is produced by the one just preceding."

eliminate or weaken the undesirable phase of such action while strengthening the opposing phase.

An Analysis of the Type Effect Curves

With these several examples in mind, let us again consider Curve A or the weak monophasic effect following slight stimulation or a small dose. In this connection we must remember that to biological effects belong not only our medications but all the other stimulations which occur in life. The stimulants which the living organism requires for its very existence such as the nutritional substances needed for the life of the cell and also the growth advancing stimulants which may act as ferments or similarly to catalysts. Further, we must add the various influences or stimulations that determine the course of disease. In other words, in living beings we recognize two categories of effects; a so-called physiological normal influence and a pathological effect. These are differentiated only through the intensity of the action and the sensibility of the cell concerned. Hence one may gradually pass into the other as the stimulant may be the same in both cases. The effects of normal physiological stimulation are represented by the Curve A; that is, the gradually increasing monophasic effect resultant upon slight stimulation or a small dose. This curve also represents the gradual curative effect of small doses of a drug upon diseased conditions

particularly where the deviation from the normal in the observed function has been in the direction which corresponds to the characteristic effects of the drug under consideration. To quote, "Under suitable conditions the possibility exists of causing a not irreversible functional change to return to normal (in the sense of Curve A) by means of small doses, especially in those substances whose characteristic and chief effect (in large doses) would have aggravated the already changed functional state." As a typical example, the stimulating effect of papaverine on the intestine or the muscle of the leech can be most convincingly demonstrated if the organism has been previously fatigued. Again, small doses of morphine depress the tonus of involuntary muscles most when such tonus is originally high (that is in the condition which corresponds to the characteristically stimulating action of morphine on smooth muscle).

Curve B represents a response to larger doses and it exhibits a definite diphasic effect beginning with excitation or stimulation, then depression, and finally return to normal. It can readily be seen that points in time on this curve offer illustrations of the Schulz rule or generalization. We might cite any number of proven examples of this rule, as for instance, the momentary increase in saliva after belladonna admin-

istration followed secondarily by a drying of that secretion. Again the stimulation of the puerperal uterus of the cat with small doses of quinine and relaxation with large doses, etc.

This curve also offers a very admirable explanation of the double phasic effect of the hormones. To quote Zondek and Ucko: "If we observe in detail the course of a hormone effect, we will observe that a second effect opposite as a rule follows the first typical hormone effect. Thus by administering epinephrine the characteristic increase in blood pressure is followed by a decrease, the hyperglycæmia is followed by a short hypoglycæmia; pituitrin causes at first an increased diuresis which is followed by a decrease; the characteristic decrease in the blood sugar after insulin is followed by a small blood sugar increase as is seen in careful observations."

Further, the B Curve represents certain physiological responses in diseased processes. Thus we often notice leukopænia-leukocytosis, resistance increase-resistance decrease, hyperglycæmia-hypoglycæmia, acidosis-alkalosis, hyperacidity-hypoacidity, shock-collapse, vasoconstriction - vasodilatation, diuresis-anuria, etc.

Again the B Curve represents the response of normal or diseased organisms to moderate doses of drugs. Obviously, a more desirable response is ob-

tained from a dose producing Curve A, where there is no untoward depression before the final return of function to normal. We have referred to this previously (Chapter III). The phenomenon of susceptibility, or that is the functional states of the organ or the organism treated, enters the reaction. It has been shown that an organ or organism whose function is depressed is most susceptible to a drug which is capable in large dose of producing a similar depression in normal structure of the same type. Some examples of this have been cited above. The fact that a gouty person is 250,000 times as sensitive as a normal individual to formic acid serves as a nice clinical example. Kotschau hints at what has been many times reiterated by others, as for instance, Boericke of Philadelphia, namely, that the determination of effective range of dosage involves provings on the sick as well as on the healthy. Walbum has carried this study into the experimental laboratory. (See Chapter X on Posology).

With larger doses or with moderate doses upon especially sensitive organs or organisms, the type B Curve of response changes to or merges into Kotschau's Curve C. This curve shows at first intensive positive or stimulative response followed by great depression and irreversible injury resulting in complete cessation of function.

*The Application of the Type Effect Curves
to Homœopathic Prescribing*

Kotschau believes that the type effect hypotheses offer an accurate means of observing and recording the course of biologic reactions, and intimates that, after sufficient experiment, we may be able to predict the course of a reaction if we know the main effects of the active agent used. He emphasizes the fact that these hypotheses explain nothing, that they are consonant with the observed clinical results and experimental facts embodied in homœopathy. He feels that they should offer every medical mind an avenue of approach to a rational utilization of drug effects, for to repeat, "Under suitable conditions the possibility is given to bring a not irreversible changed functional condition back to the normal in the sense of Curve A through small doses and especially through substances the characteristic and main effect of which (predominating with large doses) would change the already changed functional condition for the worse."

It is quite obvious from Kotschau's work as indeed from the common experiences of every day life, that substances with which we come in daily contact may prove either beneficial or harmful, dependent upon the factors enumerated and possibly upon other conditions not yet known to the scientific world. Food,

even water, may prove to be a rank poison. A medicinal agent may prove beneficial, ineffective, or actually harmful. It is common knowledge that mercury in large amounts will inflame the kidney and suppress its function. In more moderate doses, excretion thru the kidney is increased. Let us take a clinical illustration. Gelsemium evidences its action upon the motor side of the brain and spinal cord, producing venous engorgement and a toxic state associated with dullness, dizziness, drowsiness, extreme languor, heaviness and aching of the entire voluntary musculature. Influenza depresses the system in much this same way. Small doses of gelsemium will bring the changed functional states of the above disease back to normal more frequently than will any other remedy while large doses will only aggravate the condition. This is in keeping with the experiments of Kotschau, in which morphine, papaverine, paraldehyde, chloral hydrate, etc., prove capable, in small amounts, of returning to normal, muscle tissue which has previously been disturbed in the way ordinary dosages of each of these substances would alter its function.

Homœopathy is fully explained by Kotschau's type effect hypotheses, and these in turn cover any data thus far gathered about the effects of medicinal agents on living tissues. Altered function due to disease is best brought to the normal thru small

amounts of a medicinal agent which in large dose can produce an aggravation of the state already present. In other words, use therapeutically, in attenuation, that which can produce in full strength a state similar to the diseased one to be treated. In the light of such knowledge, let us return to several of the so called "specific" practices of medicine today:

1. Mercury as a specific in treating syphilis. We are often prone to think that the drug acts as a spirocheticide and nothing more. That is something like saying kreosote or formaldehyde will kill the tubercle bacillus. It is spirocheticidal in vitro, but cannot be introduced into the body tissues in a spirocheticidal dose without fatality. Lomholt and others have conclusively shown this. Lomholt finds the content of mercury in the blood and tissues of patients under full dosage treatment to be never more than 1-2 mgs. per liter. On the other hand, he shows that the spirochete grows readily in horse serum containing as much as 20 mgs. of mercury per liter. We must conclude, as do most of the modern authorities, that the drug stimulates antibody production, and that it is not spirocheticidal in the sense formerly taught. We must consider mercury, therefore, as something more than a mere parasiticide.

Kolmer hints at the more logical role of mercury in stimulating antibody resistance, which, in turn, so alters the tissues of the host as to make them unfit

for habitation by the spirochetæ. To quote, "numerous investigations within recent years have indicated that certain drugs may induce a temporary state of immunity to trypanosome infections, by stimulating the antibody producing tissues, the leukocytic mechanism, or both, or combine with anti-bodies and render the latter more active." Relative to mercury in particular, "in the experiments of Toyama and myself while massive doses of mercuric chloride tended to suppress anti-body production, smaller doses tended to increase the production of agglutinins, and augment the complement production after primary decrease."

Whether or not Kolmer's conclusions as to the mechanism of the action of this great polychrest are or are not correct, it is interesting to note that the manifestations, pathologic and clinical, of the large majority of syphilitics more closely simulate the effects, pathologic and clinical, of the drug, mercury, than of any other known substance. I have carefully reviewed this whole subject. In this connection, Rynd and Myerson have studied buccal and pharyngeal lesions, Zwick skin manifestations, Kolmer and Lucke central nervous system, bone, cardiovascular and parenchymatous organ changes. All with one accord are struck with the similarity between the effects of the drug, mercury, and the disease, syphilis. For instance, the microscopic changes that mercury

has caused in experimental animals may be briefly summarized:

1. Perivascular round cell infiltration.
2. New vessel formation.
3. Focal necrosis (late effect) with ulceration (mucosæ and skin) or gumma-like formation (parenchymatous organs).
4. Fibroblastic (scar tissue) proliferation—sometimes a primary result, sometimes an attempted repair.

Were one writing a hand book of medicine, including essential pathologic changes produced by disease, the above summary would fit well the space reserved for syphilis. In other words, the application of mercury to many cases of syphilis is a homœopathic procedure, and we might even reasonably suggest that the success of this agent in a curative way is simply a measure of its homœopathicity to the case treated. At times other agents may be called for homœopathically; in such instances mercury may fail signally, as, indeed, we have seen it fail.

2. Quinine as a specific in malaria. You will recall that a study of this drug first led Hahnemann into fields of homœopathic research. The mother substance of this drug, cinchona, came into use for intermittent chills and fever (ague) shortly before Hahnemann's day. His clinical success therewith encouraged him to make the experiments already detailed, which resulted in his enunciation of the

"law of similars." Needless is it to reiterate the symptomatology of the drug or of the disease for which it has so long been a therapeutic sheet anchor. Until recently, common conception inclined to the view that quinine exerted a direct parasitocidal action against the plasmodial organism of malaria. The homœopathist has always been inclined to doubt such a view. General doubt was first cast upon this theory when it was found that maximum tolerated doses were by no means maximum therapeutic doses. Indeed, toxic symptoms are rarely produced with double the optimum amount used. With these facts in mind, Wesselhoeft, Rosin and Rosenbach, all working independently, showed that a 1-5,000 solution of quinine had no effect whatsoever upon the growth and reproduction of the plasmodium in vitro. Wesselhoeft demonstrated that the blood concentration of the drug under maximum therapeutic dosage is never above 1-200,000, and that such a concentration readily checks the paroxysms and causes the plasmodium to disappear from the body. These men were therefore forced to conclude that they were not dealing with a direct plasmodiocidal action, but rather with an indirect action of the drug. In other words, there was first a reaction between the drug and the tissues of the body, followed by an interaction between the resistance forces of the body and the invading organism. This we may reiterate is the

modus operandi of homœopathy. In this connection, we must not forget, however, that cinchona and quinine do not show a homœopathic relationship to all cases of malaria; hence, the occasional failure in cure by those who use only this "specific." Arsenic, ipecac, eupatorium, alstonia, cornus, etc., may be needed. Only because the disease runs such a uniform course in the majority of cases have we a right to look upon cinchona and its alkaloids as specifics.

3. Emetine as a specific in amœbic dysentery. An average of twenty per cent cures is reported following administration of this drug, or its mother substance, ipecac. Such a result was sufficient to justify its introduction as a valuable therapeutic agent in the disease. At present, however, other drugs, particularly arsenic, mercury and sulphur compounds have been tried experimentally and clinically. Any and all of these may at one time or another show a homœopathic relationship to the disease. Emetine was heralded as an amœbicide. Actually, were the entire maximum daily dose (1.5 gr. intra-muscularly) absorbed at once the blood dilution would approximate 1-90,000. Inasmuch as the amœba lies within the bowel and probably never penetrates beyond its wall, let us assume that this dose is all excreted simultaneously thru the bowel and then held within one millimeter of its surface. The resulting concentration would be 1-36,000. Now, in vitro, Rogers and

Vedder, and Abel have shown that a dilution of 1-20,000 will inhibit the activity of the amœbæ, but not destroy them. Again, one is forced to conclude, as did they, that the drug acts upon the tissues of the host to stimulate anti-bodies or other resistance mechanisms against the causative agent of the disease. The homœopathist finds the principle of similars a satisfactory means of determining when this should be used in preference to the others mentioned, and avoids the lengthy "trial and error" method of using first one "specific" and then another.

I have spoken of several "specifics" in diseases of a more or less uniform course. Because of the great similarity observed in all cases of any one of these conditions, routinism in prescribing is often a most successful procedure. Witness further the use of potassium iodide in certain forms and stages of syphilis, the administration of iodine in hyperthyroidism due to diffuse hyperplasia of the gland, the application of phosphorus in rickets, the giving of gelsemium in influenza, the injection of vaccines for prophylaxis and for treatment of various forms of infection. Note that in each instance, a homœopathic relationship may exist between the drug and the disease. It is in keeping with work of Hahnemann, Schulz, Kotschau, Rentz and others that the success attendant upon the use of any "specific" is actually a measure of its homœopathicity to the case treated.

The "specifics" mentioned are certainly striking examples of such a view. They are all agents producing in the healthy alterations in tissue and function similar to those they have time and again made normal in disease. Such a relationship is established thru observation and involves inductive reasoning from recorded facts. It speculates neither with theories of life, nor of health, nor of disease. It affords no explanation of the intimate processes thru which drugs or other extraneous agents actually exert their influence upon the life force. These are things the human hand has not grasped, the human eye not yet seen, the human mind, as yet, not comprehended. Perhaps we shall never palpate these essential life forces. Homœopathy, however, can and does deal with them. The specifics we have just finished discussing are due tribute to the efficacy of the method, and to the truth of the observed generalization upon which it is based.



CHAPTER NINE

THE APPLICATION OF HOMŒOPATHY TO THE PARTICULAR MEDICAL PROBLEM

“The test of the value of any research is to be found in the application of its results.”—PATERSON.

We have touched, perhaps too lightly, upon the scientific background of biochemical, pharmacologic, and clinical experimentation which demonstrates the existence of the natural rule of similars. Let us turn from this to the practical building up of the materials with which we shall apply this principle to disease. From what has gone before, it is obvious that every disease has a basic stratum of disturbed function with or without tissue alteration. This exhibits itself thru the outward manifestations of physical signs, laboratory findings and subjective symptoms. The more gross of these, *viz.*, physical signs and laboratory findings, will tend to hold fairly constant for any given disease, as will also certain fundamental subjective symptoms to which we have previously given the name basic. Upon these our diagnosis will be made. Peculiar manifestations may be observed among physical signs and in laboratory findings, but are more liable to show themselves in

the subjective reaction of the patient to the diseased state. These represent the particular reaction not common to other organisms of the same species suffering with the same disease. Obviously enough, these peculiar or determinative features are part and parcel of the reaction to the invading diseased state, and must also have a physiological basis. It is thru the understanding of these determinative symptoms and the probable underlying physiological mechanism that the homœopathist is enabled to select a drug capable of setting up a similar disturbance in the human economy. When the underlying physiological mechanism is easily ascertainable, it is a very simple matter to analyze the entire symptom-complex of the drug and to keep in mind the range of its therapeutic possibilities. *Nux vomica* affords an easy and simple illustration:

It would seem that the essential action of this drug is its heightened sensitivity to external stimuli. This heightened sensitivity shows itself in the gross poisonings by spasm of both voluntary and involuntary musculature, reflex in origin. When one looks to the finer physiological effects upon which a prescription is to be made, this one single fact—heightened sensitivity to external stimuli—still explains the phenomena. Allen's record is quoted, "Intolerance of noise or talking, music and singing affect him, sensitive to impressions on the senses, intolerance of odors

or bright light, impatient of lightest step or jar of floor, beside himself at the slightest contradiction, easily startled." These are all evidences of hyper-irritability, particularly of the special senses, which might be further amplified from the same source did time permit. Relative to the face, we find "Jaws—contraction, like lock-jaw; tetanic rigidity; itching pimples above the margin of the upper lip; sticking sensation from touching the hair in the beard, etc." In the gastro-intestinal tract, there is "salivation; much saliva in fauces; spasmodic pain from pharynx to pit of stomach in the morning; constriction of pharynx; swallowing impeded; aversion to food; thirst but nausea soon after drinking; nausea; eructations; griping pains through stomach, etc. All these symptoms brought on or made worse by eating." Again we see the result of the hypersensitiveness to an external stimulus, such as food.

The following symptoms are from Boericke (p. 477): "Constipation, with frequent ineffectual urging, incomplete and unsatisfactory; feeling as if part remained unexpelled. Constriction of rectum. Irregular peristaltic action; hence frequent ineffectual desire, or passing but small quantities at each attempt. Absence of all desire for defæcation is a contra-indication. Alternate constipation and diarrhœa—after abuse of purgatives. Urging to stool felt throughout abdomen. Itching, blind hæmorrhoids,

with ineffectual urging to stool; very painful; after drastic drugs. Diarrhœa after a debauch; worse, morning. Frequent small evacuations. Scanty stool, with much urging. Dysentery; stools relieve pains for a time. Constant uneasiness in rectum. Diarrhœa with jaundice."

We are evidently dealing with a constipation resultant upon heightened and irregular stimulation of the peristaltic action of the bowel. This stimulation may result from either abnormal products within the intestinal tract, or heightened sensitivity on the part of the individual to peripheral stimuli. The ineffectual urging and "feeling as if part remained unexpelled" clearly suggest the irregular peristalsis present. The alternation of constipation and diarrhœa show the extreme irritability, or, that is, the exquisite sensitiveness, to external stimuli. For the same reason, there is relief from stool, as the fœcal mass (external stimulus) is ceasing to act. The hæmorrhoidal condition is only a further evidence of the spasmodic and irritable nature of the affection, representing the irregularities in circulation consequent upon the type of muscular activity present. *Nux vomica* is a widely used polychrest presenting a large number of symptoms referable to every portion of the body, and all of importance at one time or another in its application to human ills. The thirteen pages devoted by Allen to this drug alone would tax

the memory of the best reader. Memorizing becomes a comparatively simplified process, when the symptoms are grouped about the single physiological fact mentioned. It is easy to see that this drug lends itself only to the cure of states where functional change without tissue alteration has taken place; that in addition such diseased states must be capable of reacting upon the organism to produce a high degree of increased excitability of the sensory side of the nervous system. Such a condition may occur as a direct result of the diseased condition, or, as is more frequently the case, is the resultant of the action of the disease upon especially susceptible constitutional make-ups. In other words, every homœopathic prescription is immediately concerned with two predominating factors—the disease and the constitution affected by it. Both are of extreme importance and produce the diseased state as seen in any case of ill health. The interplay of these two factors alone makes for individualization of every case of disease—even in the face of an epidemic.

The Evaluation of Symptoms

It is inconceivable that any finite mind can remember a vast literature of finely differentiating manifestations of disease or of drug action. Hence it is necessary to evaluate these manifestations in such a way as to give them practical importance. Let us

attempt this. In the first place, basic symptoms are essential to the success of any prescription. It seems impossible to ignore the fundamental disturbance caused by the disease or the underlying changes wrought by the remedy, and still make an effective prescription. In the case of *nux vomica*, for instance, we must ever keep in mind its ability to heighten the sensitivity of the sensory side of the spinal cord. Having correlated this underlying activity of drug and disease, we are ready to consider the determinative symptoms or those which differentiate the patient or the drug from any other of the same class. Under this heading, in order of importance, we speak of type of patient (constitution), mental alterations, modalities (external influences changing the symptoms or affecting the course of the disease), particular symptoms (those referable to a special organ or part).

Individual Susceptibility (Constitution)

Certain types of individuals prove most susceptible to certain diseases. For instance, the poliomyelitic child has been described by Draper, the tuberculous diathesis is a clinical entity, the choreic make-up is well delineated. The field of endocrinology, indeed, might be called a study in constitutions; we find pituitary, thyroid, adrenal, gonadal, thymic types. Draper has even ventured so far as to adopt a con-

stitution most likely to develop gall-bladder disease, another to have pernicious anæmia, a third to show nephritis, etc. It is suggested that chlorosis occurs only in blondes. Boyd has undertaken to discuss at some length *The Constitutional Factor in Disease*. He stresses its importance in the application of the similar rule, for which the totality of the indications is so important. "The disposition to disease is said to vary in different individuals as the result of differences in constitution and conditions." Pende defines the constitution as "the morphological, physiological and psychological resultant (variable in each individual) of the properties of all cellular and humoral elements of the body, and the combination of these in a special cellular state having a balance and functional output of its own, a given capacity for adaptation and a mode of reaction to its environmental stimuli. Such a resultant is determined primarily by the laws of heredity and secondarily by the disturbing influences exercised by the environment upon the individual's hereditary plan of organization." The interplay of these factors controlling constitution and those of the external conditions associated with disease, predicate the individuality of the morbid state in any particular organism. These variables make not only for differences in reaction to disease, but specificity in susceptibility to medicinal agents as well—a problem of particular

interest in homœopathy. For example there are racial differences in the reaction to poisons; the negro and the Malay tend to show excitement, delirium and convulsions from large doses of morphine, whereas the white man usually becomes stupefied. Individual idiosyncrasies to drugs are well known. Sensitization to foods is common. The constitutional factor in the so-called sudden thymic deaths from injections of various substances is commonly recognized. The increased sensitivity of thyroidless animals to the inorganic poisons falls into the same category. Conversely, the increased resistance of the white mouse to acetonitril and its decreased resistance to morphine upon feeding thyroid tissue also illustrates the point; as does also the insensitivity of the thyroid case to quinine.

So, we may delineate for various drugs the constitutional make-up upon which its effects are most easily and characteristically portrayed. For example, the individual most prone to be influenced by nuxvomica is the irritable, irascible, thin, "bilious" man of sedentary habits and large business responsibilities. He works at high tension, is easily upset by occurrences around him, and often finds relief in this or that stimulant. Such a person developing any of the conditions outlined above for this drug will show a very quick response to its application. I recall most clearly a gastric neurosis in such a person in whom

ulcer, diverticulosis, and even malignancy had been considered only to be ruled out by carefully conducted laboratory procedures, and for whom the ordinary routine therapeutic procedures had afforded no relief. The symptoms were of four years' duration. *Nux vomica* relieved in one week; there has been no recurrence in five years. Thus, often a consideration of the type of patient may lead directly to a successful prescription.

Mental Symptoms

Mental manifestations afford a second group of keynote symptoms in prescribing. It is impossible to discuss at length deliria, changes in reasoning power, alterations in memory, hallucinations, illusions—any or all of which may be present in disease or under drug action. Deliria may concern themselves with business affairs, pleasure, religion, sex, loved ones—indeed any subject with which the patient's life has brought him or her in contact. Changes in reasoning power may involve illogical reasoning at first on one subject alone—such as mathematics, philosophy, religion, etc. Alterations in memory are of importance in determining the diseased state and selecting its remedy. Familiar streets may be forgotten. Names may not be recalled. Right words may fail to come. Letters or even syllables may be omitted. Hallucinations and illusions may

take such a variety of forms as to be of much diagnostic value in disease and in prescribing. Changes in one or more of the various mental spheres color many cases of acute disease and practically all cases of chronic disease to a more or less degree. These changes effect the most exquisitely sensitive part of the human frame, and therefore offer the most assuredly accurate means of differentiating one case of a disease from another, or one drug picture from another of its own class. For example, the typhoidal state is frequently associated with the illusion that the body is in pieces and that the individual must struggle to get himself together again. Were it not for this peculiar mental reaction the drug, baptisia, would be hard at times to distinguish in this disease from rhus toxicodendron or from arnica. In acute febrile disturbances, or in acute manias, belladonna, stramonium, and hyoscyamus can only be differentiated on the particular character of the hallucinations present. These three drugs belong to the same botanical family, and possess the same alkaloids in varying proportions, yet the human mind is such a delicate indicator of drug effects that thru this medium differences in action can be made out. So, in disease, the mental reaction is often the only feature distinguishing two cases of the same malady. The more nearly we can appraise these delicate dif-

ferences the more accurate our homœopathic prescription and the more successful its application.

Modalities

Modalities, or the external influences affecting the appearance, duration, location, character of a symptom, afford a third group of manifestations of extreme usefulness in treating any malady, for they are so universally present in all cases of disease. They represent the environmental changes responsible for the physiological variations occurring in health, and affecting the character and degree of the derangements occurring in sickness. They are in any individual case undoubtedly a resultant of constitutional factors and external conditions. As illustrative of the part played by the constitution, we may mention the sudden death in sunstroke among those of thymico-lymphatic constitution; the small adrenals, together with a general hypoplasia of the chromaffin system in those dying of heat stroke; the aggravation of myxedœma and the relief of thyrotoxicosis from cold; the onset of "mountain sickness" in hyperthyroid cases; the frequency of apoplexy and tendency to asthmatic attacks when barometric pressures are low; the aggravation of whooping cough in wind storms.

The importance of external conditions is still further emphasized by quite familiar phenomena: the effect of worry upon sleep, of a full meal upon

general mental and physical activity, of cold and heat upon circulation, of noise upon ability to concentrate, etc. These exogenous influences play an even more important part in differentiating disease syndromes and drug effects. We are all fully cognizant of the aggravation of the gouty toe in damp weather, of the increased severity of the pituitary headache upon taking sweets, of the evening exacerbation of the syphilitic headache, or the morning appearance of the nephritic occipital pain. We find the pain of pleurisy relieved by lying on the affected side (splinting), the discomfort of peptic ulcer relieved by food, the dyspnoea of heart disease made better by rest, neuralgia ameliorated by application of heat, etc. In like manner, when we turn to the effects of medicinal agents, the joint symptoms of formic acid are aggravated by dampness and cold, the headaches of silver nitrate are worse from the ingestion of sweets, the headaches of mercury appear at night or are worse at that time, those of arsenic in the early morning. The pleurisy of bryonia demands splinting, the epigastric distress of anacardium is relieved by taking food, all the symptoms of magnesia phosphorica are ameliorated by heat, adrenalin acts somewhat more quickly in the afternoon than in the morning; the pulse beats, however, in the morning hours are distinctly stronger than in the afternoon and evening, etc. In other words,

external influences are always acting upon us. They aid us in describing disease and in delineating the effects of remedies. These modalities go further in that they affect different individuals in different ways, dependent upon the particular constitutional make-up present. One individual with typhoid fever may be better from lying quietly, while the second may be extremely restless and find relief of his symptoms only from moving about; bryonia and rhus toxicodendron exemplify these two modalities respectively. The arthritis of kali carbonicum is relieved by warmth, while that of natrum muriaticum is better from cold. So, one might continue indefinitely to give further examples of the usefulness of modalities in selecting the simillimum (most resembling remedy) for a particular case of disease.

Particular Symptoms

Particular symptoms must always be kept in mind as they indicate the tissue proclivity of the diseased process on the one hand, and that of the drug used on the other. For instance, in diseases of the liver, one must distinguish drugs such as arsenic, phosphorus, chelidonium, podophyllum, bile salts, sodium sulfate, graphites, lycopodium,—all of which show a predilection for that organ. In like manner bryonia, rhus toxicodendron, apis mellifica, sulfur iodide, etc.,

will be thought of in affections of serous membranes.

*The Physiological Mechanism of Symptom
Production*

In the evaluation of symptoms, which has already been amply implied in our discussion of basic and determinative phenomena, one thing further cannot be too strongly stressed. The curative remedial agent must show not only superficial symptom similarity to the disease manifestation, but also a similar mechanism of production. To illustrate; despite their herpetic-like lesions, arum triphyllum and mucuna (dolichos) are valueless in the treatment of herpes zoster. The lesion in the one instance is caused by the penetration of the skin by fine crystals, and in the other by the penetration of fine mucuna hairs. The mechanism in both instances is that of local skin irritation. In herpes zoster on the other hand, the herpetic eruption is a result of the following sequence of events: the essential feature is the irritative or inflammatory process in the posterior nerve root, which initiates impulses both to the brain and to the periphery. The anti-dromic impulses to the periphery cause the release of a split proteid product probably akin to, or identical with, histamine in the region of the surrounding capillary beds of the skin. Dilatation of the vessels results thru a reflex

mechanism. The consequent increased permeability of the vessel wall permits the exudation of serum to form vesicles along the distribution of the nerve trunks involved. *Ranunculus* is apparently a drug imitating this process, and should therefore be homœopathically indicated in true "shingles."

To take another illustration: it is generally conceded that the essential lesion in arthritis lies in the capillary circulation. This fact explains why practically none of the remedies recommended and useful in arthritis show any bone changes, but all are capable of altering capillary circulation.

These illustrations show the necessity for knowing the mechanism thru which the symptoms are produced. Conversely, it is also important not to ignore symptoms apparently unrelated to the disease focus; they may have an origin common with it. The neck pain of right-sided central pleurisy or of sub-diaphragmatic abscess results from the nerve supply common to the two areas. The intimate connections of the vagus with the fifth and other nerves account for the association of post-auricular pain with certain forms of gall-bladder disease, and explain the aggravation of certain frontal headaches by the ingestion of cold water. The constrictive pain of angina pectoris is due to the co-associated spasm of intercostal muscles. The pain of *bryonia* is no doubt due to the protective spasm of the intercostal muscles

overlying the area of pleurisy. The gastro-colic reflex rationalizes the symptom found under a certain group of remedies, "diarrhoea brought on or made worse by eating," although other mechanisms particularly achylia gastrica, may be responsible for the same symptom; hence, an outward manifestation may have its origin in one of several body mechanisms. Obviously, remedies acting thru one mechanism are not interchangeable with those acting thru another channel.

Homœopathy a Specialty in Individualization

From a practical standpoint, then, we will usually find that drug curative, which presents the basic picture of the disease syndrome to be treated, and at the same time evidences an affinity for the peculiar constitution, shows the keynote mental reactions, is subject to the same modality or modalities, and produces the particular symptoms found in the diseased individual. One realizes at a glance the tremendous practical difficulties encountered in practising homœopathy. One is made aware of the specialized training and constant study necessary. Unless, however, one is willing to spend the time necessary for individualization of cases, results need not be expected. The four classes of manifestations just mentioned offer the only reliable short cut in such individualization. Single keynote symptoms, so commonly em-

ployed, may be used cautiously in office practice, but failures therefrom should be followed by further study along the lines outlined. What has been said focuses our attention more than ever upon the homœopathic method of prescribing as one which concerns itself with treating the individual who has the disease and not simply the disease. In other words, homœopathy is at one and the same time a plea for and a cry against specialism. It deprecates the specialism, which divides the body into a number of more or less delimited sections each for separate treatment of its ills. It pleads for the specialism which treats the derangement of that particular organ or part as evidence of a diseased state of the whole organism. It pleads for the specialization which individualizes the problems of the organism as a unit and treats altered function of the part in relation to the whole. Thus homœopathy enters the sphere of nervous and mental diseases, of ophthalmo-oto-rhinolaryngology, of gastro-enterology, of cardio-vascular disease, of pulmonary ill-health, of gynæcology, of urology, etc. The homœopathist, that is one who applies homœopathy, stands as a specialist at a pivotal point between the individual with the disease, and the organo-specialist who makes the detailed investigation of the particular tissue or tissues bearing the brunt of the disease. He must correlate the work of the latter with his own investigation of the needs of the

patient as a whole. Conversely, the organo-specialist who can think in terms, not only of the particular part of the body with which his work perforce is associated, but also of the interrelation of this work to the organism's general welfare, is in a position to apply homœopathy sanely and successfully. He has then ceased to be a routinist and justifies the complete confidence of patient and referring physician. The homœopathist who works without a full knowledge of the condition of the organs mainly affected is much handicapped. The organo-specialist who sees only those organs and ignores the patient is equally remiss in fulfilling his duty to suffering human beings. Rarely, if ever, is one person able to cover both sides of the problem adequately. In the best interests of the sick, there is need for the closest and most harmonious co-operation between the two.

I would like, therefore, to direct your attention to homœopathy as a method focusing its effort upon the individual and the individualistic side of disease. At one end of the scale lies the field of public health which deals with disease en masse, and aims largely at prevention; at the other, is found homœopathy, which copes with the individual's particular health problem and aims chiefly at cure. The places of both are equally important. There is no conflict; there is complementary effort.

CHAPTER TEN

POSOLOGY

"The quantity of drug to be given is *enough*; the repetitions of dose *often enough*; and the duration of treatment, *long enough*."—SOLIS-COHEN.

Posology embraces everything pertaining to dosage, *i.e.*, amount of dose, frequency of repetition of dose, preparation of dose, etc. Dosage is a matter entirely too little understood in connection with homœopathy, and therefore warrants a few words of clarification. A frequent misconception is that the difference between the methods of homœopaths and other physicians lies in the very minute amounts of drugs used by the former and the much larger amounts employed by the latter. As illustrative of such a conception, no less known physician and writer than Oliver Wendell Holmes, in 1842, heaped ridicule on all of Hahnemann's dilutions. The very idea of a dilution to the sixth decimal was preposterous to the genial writer. He remarked that the twenty-fourth required one to imagine one drop of medicine diluted in a million lakes each containing ten billion gallons.

The Rule of Dose

From the talks preceding, it is obvious to each of you that while dosage is important it is quite second-

ary and apart from a discussion of the homœopathic generalization per se. It is equally obvious that the only rule of dosage implied by the principle of similars would be to use the smallest amount of the indicated drug to produce the desired effect. This is the one and only rule of dosage observed in homœopathy. In keeping therewith one might have occasion to prescribe a drachm or more of the tincture, or a millionth of a grain or less.

*A Consideration of the Quantitative Relationship
Which May or May Not Exist Between Size
of Dose and Extent of Effect*

In determining the actual amount of drug to be used one must keep ever before him the fact that no quantitative relationship necessarily exists between the amount of the stimulus (drug or other medicinal agent) and the amount of the response (alteration in patient's condition). Stated differently, the amount of energy set free in the stimulus bears no fixed or mathematical relationship to the amount of energy set free in the response. A slight pin prick (stimulus) may result in retraction of the entire arm and forearm (response). The spark from a match (stimulus) may detonate tens of hundreds of pounds of dynamite (response). One drop of water (stimulus) may "crack" ten gallons of emulsion.

In connection with a consideration of phase effects, Rentz has discussed the subject of the quantitative relationship existing between "stimulus and reaction." Virchow's conception that Newton's law of action and counter action, or effect and counter effect, accounts for the course of physiologic events subsequent to the application of a stimulus would not seem to be borne out by the work of Rentz and others. Rentz suggests that a more comprehensive principle of mechanics is that of Le Chatelier-Braun: "Every external influence evokes in a body or a system an alteration in such direction that as a consequence of this alteration the resistance of the body or the system against the external influence is increased." This principle says nothing about the quantitative laws of processes which run in the body, but only the direction which such a process takes. This principle in itself is, however, not entirely satisfactory, as it leaves a consideration of the presence of over-compensation and polyphasic effects unconsidered. If, however, one brings into relationship with this principle the law of inertia, or as Aberhalden has called it, the ever-present "battle for balance," then the biologic processes may be understood. (See ff p. 139.)

One of the most fundamental properties of living matter is its ability to react to changes in its environment, or to be affected by external influences of one

form or another. This "irritability" of living matter forms the entire basis for homœotherapy, for in contra-distinction to direct therapy, which aims at interaction between drug and invading disease agent, homœotherapy aims at an indirect reaction thru stimulation of the tissues of the host. In living systems, the amount of the stimulus may be very slight as compared with the amount of response, so that a seemingly trivial stimulus or irritant may initiate far-reaching changes in the organism. Such a relationship has been called "trigger response." Lendel's investigations with sulfur are illustrative. He found the average excretion of sulfur thru the skin (roughly 10 mgm. daily) could be tripled in healthy individuals by one or several doses of sulfur 3x or 6x, and increased still further in those suffering from seborrhœa, furunculosis, etc.; in other words no quantitative relationship existed between stimulus and response. In similar manner, Baader found "that patients with lead poisoning, who considered themselves cured, because they were free of symptoms and did not show any more objective poisonous manifestations, after a short period (sometimes only one to two weeks) of return to work, again were attacked by severe poisonous symptoms, so that they could not work any longer. As a rule this second condition lasted much longer than the previous primary lead poisoning." Baader's experi-

ments showed that the small amount of lead absorbed on resuming work had a "mobilizing effect" on "tissue or latent lead." In other words stimulus and response were not quantitatively comparable. Since the energy in all living processes is transformed chemical energy, any stimulus must be able to act by altering the rate, character, or size of chemical and physical reactions taking place. The stimulus must be great enough to be effective; if too small, no reaction takes place; if very large, no greater physiological response will be noted, and pathological change may be produced, for it is the nature of cellular structure to respond maximally or not at all (Sherrington's law). Any effective electrical stimulus to a muscle bundle will produce maximal contraction. Subliminal stimuli show no appreciable effect, and stimuli larger than the smallest effective show no alteration whatsoever in the character of the response, unless sufficient to completely destroy the integrity of the living tissue. In this connection, Rentz states, "In order to avoid damaging phases (of drug action) it is recommended to give *frequent, small amounts of poison.*"

As cited, previously one drop of water is a sufficient stimulus to crack a large portion of emulsion. There is increasing evidence to make us believe that basic living structures resemble to a more or less extent an emulsion, by which we refer to the pres-

ence of two or more fluid phases of different composition, one or more of which is in a state of fine subdivision or otherwise dispersed in the other which is continuous. The stability of such an emulsion depends mainly upon the condition of the surfaces separating the two phases. In the case of cod liver oil emulsion the stability is attained by the use of the mucilaginous substance acacia, which forms a protective film or coating about the divided oily particles. Such a film need be only one molecule thick and correspondingly slight changes may cause cracking or breaking down of a large volume of the emulsion.

In other words trigger response connotes the transmission of some effect produced by or initiated by the stimulating agent or agents throughout the entire responding system or organism. For any particular desired response there is therefore always an optimal stimulation below which effects are not noted and above which undesired reactions are initiated. This optimal stimulation is the desideratum of every homœopathic prescription, and represents in each instance the dose of medicament required.

Practical Rules Governing Dosage

The application of such medicinal agent in the proper amount has received a great deal of attention in the hands of clinical and laboratory research

workers, so that certain rules of dosage may be formulated:

1. The more acute the diseased state the lower the potency (dilution) necessary for its amelioration. Many medicaments are only prescribed in the 3x (1-1000 drug strength). Conversely, chronic disease demands higher potencies (greater dilution). To quote Walbum, who has worked with the effects of metals upon ratin infections in rats, tuberculous and staphylococccic infections and tetanus and diphtheria toxins, in rats, guinea pigs and rabbits, "Furthermore, smaller doses should be used after the symptoms have made their appearance since the organism is then more labile and more easily influenced. For example, animals can be given large doses in the first few days after the infection, doses which would later seriously aggravate the disease. These observations are in distinct accord with the homœopathic practice of giving smaller doses in chronic diseases." To illustrate with a series of cases studied by Walbum to determine the optimal dose of cæsium with ratin infected mice:

0.0025 mol cæsium	...	10%	survived
0.002	" "	...	25% "
0.0015	" "	...	74% "
0.0012	" "	...	95% "
0.0002	" "	...	22% "

2. The optimal dose is one which does not cause palpable reaction. This is confirmed time and again at the bedside. It is also among Walbum's conclusions following laboratory analysis. In his experiments, Walbum shows that animals, which have been treated with absolutely deadly doses of toxins and bacteria, and those which had cancer, were saved from a sure death thru minute doses of metal salts. Large doses on the other hand aggravate the condition and the animals die sooner than the controls. In tar cancer in mice he uses silver nitrate in a molecular solution of 10^{-10} to 10^{-19} in order to obtain the favorable reaction. If one uses larger doses, for instance, 10^{-5} , then one achieves a growth much more rapid than usual and the animal dies after a few days.

In a very impressive manner Walbum shows that the optimum of the effect is limited to a certain rather narrow degree of dilution, from which follows the already well recognized clinical use of exact dosage. It is not uncommon, in applying the science of homœopathy, to judge incorrectly the dose best suited to the needs of the individual to be treated. In such an event, if the dose be too small, no amelioration in the patient's condition results. If the dose used is too large, the entire symptom complex is made worse, but no new or unusual manifestations appear. Such an increase in the symptoms is termed an ag-

gravation and care should be taken to guard against it. The inability to select with accuracy that dose most applicable to the observed condition has accounted for many failures with homœopathy and emphasizes the necessity for making of this broad subject a specialized, intensively studied branch of the healing art.

3. The closer the similarity of the drug selected to the disease to be treated, the less of that drug is needed to effect a cure. The object of any homœopathic prescription is the stimulation of the tissues of the host to reaction against disease. It is a logical sequence of the homœopathic principle, as aforesaid, that the drug which exerts its effects most specifically upon the organs and tissues affected, will cure with maximum rapidity, with greatest safety, and in smallest dose. Again the laboratory demonstrates, that while lathanum, cæsium, and selenium will cure tuberculosis in guinea pigs, the dose required is larger and the results more uncertain than with cadmium. In like manner, staphylococcus infected animals responded most favorably to iridium, and ratin infected to cæsium and iridium.

4. Comparatively large doses of drugs will be needed to combat one phase of action; comparatively small dosages to counteract an opposite series of effects; and vice versa. This statement becomes lucid, when we recall the work of Schulz, Rentz, Kotschau,

and others. Large doses of drugs bring out a certain range of effects; diametrically reversed effects are initiated by smaller doses. For instance, in large doses, bryonia causes a profuse, watery diarrhoea; in smaller doses, a very stubborn constipation. If we find a diseased state of diarrhoea fitting that produced by bryonia, we would need to give bryonia in drop doses of the tincture or in the 1x (1/10 drug strength), or 2x (1/100 drug strength). If we find a pathological condition corresponding to the constipation of bryonia, this drug would be of little value and might aggravate if used below the 3x (1-1000 drug strength). In like manner, ipecac in large doses is emetic; in small, antemetic. Castor oil may constipate rather than effect increased evacuation of the bowels. Morphine not infrequently demonstrates a predominantly stimulative action. Pilocarpine, dependent upon dosage, may show the usual diaphoretic action or the exact opposite state of sweat suppression. The excitant effects of atropine upon the sensorium yield to sedative action with more attenuated dose. So, as a general rule, the size of dose efficacious in disease corresponds to the size of dose necessary to evince similar drug effects.

5. Sick organisms are more sensitive to drug effects than healthy ones. Gouty individuals have been proven 250,000 times as sensitive to formic acid as the non-gouty. Only increased temperatures can be

lowered by the usual doses of antipyretics. The fibrillating heart responds to the effects of digitalis more quickly than the non-fibrillating.

Homœopathic Dilutions of Drugs

In this connection let us consider the actual amounts of drugs in common use by homœopaths and how such preparations are obtained. Medicaments are derived from each of the kingdoms,—vegetable, mineral and animal. Various methods of collection and preservation need not be mentioned here. Suffice it to say that in the case of vegetables, only fresh plants are used and these are collected at the height of their activity. Dilutions or potencies of the drug are prepared on the decimal scale, representing 0.1, 0.01, 0.001, 0.0001, 0.00001, 0.000001, etc., drug strength. The first of these is made by combining the equivalent of one part of drug to nine parts of some non-medicinal diluent. This represents then 0.1 drug strength, and is called the 1x. One part of the 1x plus nine parts of diluent are combined to make the 2x or 0.01 drug strength. In like manner the 3x is made from the 2x, the 4x from the 3x, etc. To determine at a glance the amount of crude drug present in any potency one simply notes the numeral in front of the x, and places the figure 1 with as many zeros following it as the numeral indicates; this represents the denomi-

nator of a fraction whose numerator is 1. For instance the drug strength of the 6x would be $1/1,000,000$; that of the 12x would be $1/1,000,000,000,000$.

Some Common "Infinitesimals" of To-day

When dilutions of drugs, such as the above, were first used by the homœopathist over a century ago, the medical world at large hooted at the idea that such "infinitesimals" could possibly show the presence of the drug, let alone any action therefrom. To-day, in and out of medicine, science is dealing with just such figures, and indeed bids fair to carry dilution even further. Abel has isolated a potent pituitary extract capable of stimulating the uterus of a guinea pig in a dilution of one to twenty million ($1/20,000,000$), *i.e.*, about the 7x. Zeller was able to find various substances which constantly stimulated growth and increased carbon dioxide production in yeast cells in the following strengths: lysol 1:8000 or nearly 4x, naphthalin 1:480,000 or about the 6x, alpha beta naphthol 1:2,400,000 or better than the 6x, sodium nitrite and amyl nitrite 1:160,000 or the 5x, oil turpentine 1:100,000, or 5x, formalin 1:400,000 or between the 5x and the 6x, eserine 1:3,200,000, or better than the 6x, morphine hydrochloride—1:160,000, or the 5x, etc. Arsenic can be estimated quantitatively by ultra-violet radiation against paper sensitized by mercuric chloride in

amounts as small as 0.00000001 gm. or the 8x. Beutner found the following substances capable of a definite alteration in electrical potential difference. These differences are sufficient in the dilutions named to produce tissue stimulation: pilocarpine 1-1,000,000,000; quinine hydrochloride 1-100,000; morphine sulfate 1-100,000; caffeine 1-10,000; epinephrine 1-1,000,000. Medical authorities recommend one ten-millionth of a gram of old tuberculin as capable of producing untoward reaction; this is our 7x. The minimum lethal dose of crude botulinus toxin filtrate has been found to be one four hundred quintillionth cubic centimeter (1/400,000,000,000,000,000,000) or our 20x. Arsenic is still germicidal in dilutions corresponding to the 6x and has been proven stimulative of vegetable growth in the 9x. Silver chloride has been detected by micro-chemical methods in dilutions of one to fifty billion or approximately the tenth homœopathic decimal dilution. Barium sulphate in the proportions of one part to five hundred trillion (14x) of diluent is still demonstrable. Mercaptan is detectable by odor in the 11x dilution or an attenuation of one to one hundred billion. One might multiply examples of the positive effects and usage of small doses ad lassitudinem. The German chemist, Traube, has made extensive experiments on the question of dosage as it relates both to colloidal chemistry and to homœopathic tenets. He

concludes: "I am certain minimal doses of drugs for physico-chemical reasons, often have maximal effects, and that these effects in numberless cases are antagonistic to those produced by larger doses, moreover it is clear that the efficacy of a drug depends not on its mass but on its degree of dispersion." Schwartz and Guttman have made studies similar to those of Traube, utilizing two of the metals. They conclude similarly that the size of the individual drug particles influences both the character and the extent of their effect upon the human economy. The potencies most frequently used are those from 1x to 6x. To-day, we can confirm the presence of drug substance not only by bed-side results, but even with cruder laboratory methods in dilutions well above those in commonest use.*

* The writer has purposely avoided the discussion of high dilutions as such; certainly some of the above figures carry us into that realm. Many factors enter into the activity of the higher dilutions. Kotschau (J. A. I. H., 24:324, 1931) has ably discussed these. He cites the extremely painstaking work of Naegeli in the decade between 1880 and 1890, which, indeed, his own experiments have done little to expand. He concludes that oligo-dynamic effects are often undoubtedly observable in the higher dilutions, but so many unknown factors enter the picture and make clear-cut deductions impossible. To quote: "Every investigator must be clear about the fact that he supposedly is not able to produce exact dilutions, without making mistakes in some direction, be it owing to changes or increase of the diluted substance through surface effects or who knows what other still unknown factors." I have intentionally refrained from mentioning Krawkow's and Kolisko's

6. Finally, the actual amount of each drug necessary in each patient must be determined from the average amount of that drug in common use, and the judgment of the prescriber at the time it is to be applied in the sick room.

The entire matter of dosage in other than homœopathic medicine is at present undergoing radical change. This change is in entire accord with the practices of homœopathy during the last one hundred thirty-five years.

In prescribing any drug, and determining the amount of it to be used, we should not forget the memorable words of the great scientist and journalist, Hufeland, "Never forget that it is not you but only Nature who can heal disease. You are only an assistant who increases Nature's capacity and

efforts in the body of this chapter, as it is quite possible they were actually dealing with oligo-dynamic effects.

In 1922 Krawkow demonstrated in his laboratory the pharmacological activity of adrenalin, bichloride of mercury, and copper sulphate in the 24x, and histamin and silver nitrate in the 32x. The dilutions were not carried further; therefore the author remarks that the thirty-second decimal dilution does not represent the limit by any means. Of great interest is his statement that very often the activity of the poison increases with dilution up to a certain point. Note that he does not say that this is always the case. These experiments were made by running the dilutions to be tested through the blood vessels of a rabbit's ear and measuring the vasodilatation and vasoconstriction in an ingenious manner. Dilutions of the heavy metals such as copper, silver, gold, mercury, nickel, aluminum, platinum, and rhodium were also found to exert

performance." In co-ordinating and carrying out its physiological function, every organism deals with minute quantities, and is susceptible to the slightest changes in its environment. We can therefore only increase nature's capacity and performance by the administration of curative agents in amounts comparable to those with which she deals in health. "Die milde Macht ist gross."

definite pharmacological action in high dilutions. Kolisko, working with salts of iron and copper on wheat germs found activity up to the 1-1,000,000,000,000,000,000,000,000,000 dilution (30x).

As aforesaid, one doubts if these workers were actually dealing with the dilutions they believed to be present. It is much more likely, they were actually obtaining oligo-dynamic effects.

A simple illustration will clarify what is inferred by the term, oligo-dynamic effects. If a 1-100 dilution of methylene blue is allowed to stand in a glass container for several hours, and then successive decimal dilutions, thoroughly succussed, made in rapid succession until the thirtieth or even the two hundredth is reached, the resultant solution upon standing several hours or more will absorb methylene blue from the walls of the glass until an ionic, atomic or molecular balance is struck. The actual dilution of drug substance then present may prove to be in the neighborhood of 4x (1-10,000) or 5x (1-100,000). So, the matter of extreme dilutions may actually be one not of extreme dilution, but one of obligo-dynamic effect.

CHAPTER ELEVEN

SUMMARY AND CONCLUSIONS

"Thy fame is blown abroad from all the heights,
Through all the nations, and a sound is heard,
As a mighty wind. . . ."—LONGFELLOW.

In the few informal talks we have had together, I have tried to make patent the salient points of homœopathy in such a way that you might clearly visualize it as a science and an art with a well defined place amidst the therapeutic methods at the disposal of the practicing physician.

Homœopathy should represent to you a method of practice for prescribing drugs and other medicinal agents. The rule for the application of this method is simply embodied in the words, treat likes with likes, or give in disease that drug, the effects of which on healthy experimental animals and human beings most closely simulate the manifestations present in the diseased state to be treated. The natural law from which this rule derives is succinctly stated, likes are cured by likes, or that drug will prove curative the effects of which on healthy experimental animals and human beings most closely resemble the manifestations of the diseased state to be treated. This law was hypothecated by Hippocrates, and first

proven thru logical Baconian deduction from experiment by Samuel Hahnemann. Subsequent facts have enlarged our conception of it, but no observed phenomenon about medicinal agents or disease has been able to discredit the truth of it.

To apply this law in the treatment of disease, of necessity, demands a thorough knowledge of medicinal agents used, a thorough knowledge of disease processes, and the ability to correlate the knowledge of the one and the knowledge of the other in such a way as to produce health.

In other words, we must be able to select for any given case of disease the proper remedy, and then know the correct dose, the necessary frequency of repetition, and the period of time over which it should be administered.

Homœopathic prescribing is an unconscious procedure in many instances, and unwittingly used by all physicians, but medicine can only derive full benefit from it when its principles are deeply and widely studied, and its application made a part of the conscious effort of all those interested in the healing art. We are standing at the threshold of the day when this shall be the case. The laboratory is making possible a thorough exposition of the facts upon which homœopathic procedures are based. Advances in diagnosis are permitting more careful bedside supervision of drug effects. Great institutions of

learning here and abroad are manifesting interest in learning of and teaching the principles first clearly elucidated by Hahnemann. The therapeutic trend is drifting steadily away from a consideration of invading organisms and disease to a recognition of the importance of stimulating the resistive forces of the host. No greater tribute could be paid by human beings to the law of nature underlying the art of homœopathy.

Homœopathy stands as "the department of science in general medicine which has for its principal objects the observation and study of the action of remedial agents in health and in disease, and the treatment and cure of disease by medication, according to a fixed law or general principle." The method rests upon experiment in the laboratory and at the bedside. Dean Patterson of Jefferson Medical College, Phila., has well said, "The ultimate object of all medical research is practice. In the final analysis the test of the value of any research is to be found in the application of its results." One hundred thirty-five years of trial have but entrenched the practices and repeatedly confirmed the principles of homœopathy.

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INDEX

- Abel,
work with emetine, 147
work with pituitary extracts,
178
- Aberhalden, 169
- Acetone, 119
daily variations in excretion of,
119
- Acetonitril, 156
- Aconitum napellus,
as anti-neuralgic, 83
- Adrenalin, 62ff., 98, 101, 102, 111
blood vessels action on, 107,
109, 128
blood clotting affected by, 132
calcium influence on, 102, 116,
117
diuretic effect of, 127
effect of, on
blood phosphorus, 128
blood pressure, 138
blood sugar, 138
cocaine group, 98
gastric musculature, 110
heart, 114, 128
respiration, 134
the uterus, 108
in asthma, 104
influence on electrical poten-
tial, 179
time of day and action of, 160
phase effects, and, 123
- toxicity to plant and animal,
110
- Aggravation, 174
definition of, 174
- Alcohol, 101, 134
rhythmicity of fermentation of,
122
action of, illustrating Kot-
schau's curves, 134
- Allen, 118
- Allen, Timothy F.,
study of nux vomica by, 150
- Allopathy, 41
- Aloes, 73
- Alstonia,
in malaria, 146
- Alvarez, 121
peristaltic studies by, 121
- Alypin, 101
blood-vessels, action on, 101,
113
- Amœbiasis,
chemotherapy in, 19
- Ambrosia, 53
- Amyl nitrite,
effect on yeast, 178
in narcosis, 117
- Anacardium, 160
- Anæsthetics. *See also* Narcosis
adrenalin effect on local, 98
kidney resistance to, 116

NOTE—Effort has been made to include the names of all authorities quoted or mentioned in the text, and of every medicinal substance and of every therapeutic principle discussed. Unless mentioned at some length, or likely to be vitally pertinent to the subject under discussion, names of diseases have been omitted. Black type letters designate the most important or most detailed reference to the heading listed.

- Anaphylaxis, 100
- Antigens,
 drugs as, 53
- Antimonium tartaricum. *See*
 Tartar emetic
- Antipyretics, 108
- Antitoxin,
 diphtheria, 17
- Apis mellifica, 71, 161
- Apoplexy, 159
- Arndt-Schulz generalization, 92
 clinical examples of, 137
 phase action and, 111
- Arnica,
 in typhoid fever, 158
- Aralia racemosa, 53
- Arum triphyllum, 162
- Arsenic, 70, 93
 antigen, as an, 54ff
 detection of, 178
 germicidal effect of, 179
 headache of, 160
 in amœbic dysentery, 146
 in liver disease, 161
 in malaria, 146
 spirocheticidal action of, 17
 wine test for, 34
 yeast effect on, 93
- Arsenic bromide, 80
 as cause of glycosuria, 80
- Arsphenamine,
 chemotherapeutic agent, as a,
 18
- Arthritis, 163
 barometric pressure on, effect
 of, 84
- Artemesia vulgaris, 53
- Aspirin,
 palliative, as a, 17
- Asthma,
 adrenalin in, 104
- barometric pressure on, effect
 of, 159
- external influences affecting,
 83
- relationship to homœopathy,
 33, 52
- Atropine, 118. *See also* Bella-
 donna
 blood sugar changes after, 133
 calcium influence on, 116
 Kotschau's type effect curves
 and, 133
 sensorium, on the, 176
- Aurum, 117
 in chemotherapy, 19
- Avena sativa, 53
- Baader,
 studies in lead poisoning, 170
- Bacteria, transmutation of
 species 67ff
- Bacteriophage, 66ff
- Baptisia, 54ff
 in typhoid and para typhoid in-
 fections, 54ff, 158
- Barium, 71
- Barium chloride,
 effect on blood vessels, 62ff,
 109
- Barium sulphate, 179
- Barker, L., 57
- Beckmann, 118
- Belladonna, 71, 100. *See also*
 Atropine
 on salvia, 137
 in acute manias, 158
- Beresin, 112
- von Bergmann, 85. *See* Von
 Bergmann.
- Berzelius, 34
- Beutner, 68ff, 179
- Bier, 22, 37, 40, 41, 84

- Biologic processes, factors concerned in course of, 99
- Blood,
 clotting time affected by adrenalin, 132
 phosphates altered by morphine, 134
 sugar changes after drugs, 133, 134
 glucose, 135ff
 sugar changes of rhythmic nature, 135ff
- Boericke, G. W., 139
 determination of dosage, 139
- Boericke, Wm., 151
 study of nux vomica by, 151
- Boldyreff, 120
 digestion studies of, 120
- Botulinus toxin, 179
- Boyd, L. J., 99, 108
 constitutional factor in disease, the, 155
 homœotherapy, definition of, 108
 mechanistic causalism, examples of, 96
- Braun, and local anesthetics, 98
- Brown, 118
- Bryonia alba, 70, 74, 83, 161
 diarrhoea of, 176
 in pleurisy, 160
 in pneumonia, 75
 in typhoid fever, 161
 pleural pain of, 163
- Burrige, 114
- Cactus grandiflorus, 70
- Cadmium,
 in tuberculosis, 175
- Cæsium,
 in ratin infection, 173, 175
 in tuberculosis, 175
- Caffeine,
 as vasodilator, 108
 diuretic effect of, 127
 electrical potential, influence on, 179
 intestine, effect on, 114
- Calcium, 62ff, 101, 114, 115, 117
 adrenalin action, effect on, 114, 117, 128
 deficiency of, 117
 diuretic activity of salts, 127
 in rickets, 53
 insulin action, effect on, 115
- Calcium chloride, 115
 intestine, effect on, 106
- Calcium sulfide, 54ff
- Camphor,
 intestine, effect on, 114
- Cantharis, 59
 for burns, 59
- Carbo vegetabilis,
 effect on carbon dioxide output of yeast, 97
- Carbon dioxide, 96
- Castor oil,
 constipation from, 176
- Catalysts, 136
- Causalism, 96
- Charcoal. *See* Carbo vegetabilis
- Chelidonium,
 in liver disease, 161
- Chloral hydrate, 141
 blood-vessels, effect on, 111
 intestines, action on, 129
 phase action of, 129
- Chloroform,
 action on heart, 106
- Cholera,
 treatment of collapse in, 129
- Choreic make-up, 154
- Cinchona. *See* Quinine

- Cirrhosis of the liver, 61
 Coca erythroxylon, 80. *See also*
 Cocaine
 as cause of glycosuria, 80
 Cocaine, 101, 102, 111
 blood vessels, effect on, 105
 intestine, effect on, 114
 Codeine, 60, 80
 toxicity to plant and animal,
 110
 Colchicum, 71
 Colloids, 66ff, 127
 Constitution. *See also* Suscepti-
 bility
 disease, types of, 154
 endocrinology and, 154
 Pende's definition of, 155
 Constitutional factor in disease,
 56
 Cooper and Moore. *See* Moore
 Cornus,
 in malaria, 146
 Cullen, 24
 Dale, 18
 Digitalis, 60
 abstinence appearances on
 heart, 113
 calcium metabolism and, 116
 diuretic activity of, 127
 fibrillation and, 177
 in pneumonia, 55
 phase action and, 109
 temperature and, 111
 Diphtheria,
 toxin of, 52ff
 Disease,
 definition of, 64
 theories of, 66ff
 Dolichos, 162
 Dosage, 167
 biologic processes, effect of
 large on, 99
 homœopathic rule of, 62, 167
 minimum, 62
 phase action and, 106
 physical condition of, s u b -
 stance as determining factor
 in, 179
 practical rules governing, 172
 Rentz' recommendation for,
 171
 size of, 173
 Dose,
 size of, 173
 optional, 174
 Draper, Geo., 56, 154
 Drugs. *See also* Remedies
 abstinence effects of, 102
 as catalyzers, 68ff
 critical concentration of, 102
 duration of action of, 101
 factors varying action of, 69ff,
 99
 phase action of, (*q.v.*) 105
 definition of, 105
 factors in production of, 106
 importance of, to clinician,
 126
 influence of fatigue upon,
 109
 rules of, 106
 universality of, 105
 physico-chemical alterations
 from, 68ff
 proving of, 79
 synergism, 102
 Dysentery,
 pacillary, 39
 Eczema,
 variations in, due to time of
 year, 84

- Ehrlich, side-chain theory, of 66ff
- Emetine, 33. *See also* Ipecac
 as an antigen, 147
 in amœbic dysentery, 19, 53, 146
 in chemotherapy, 19
- Ephedrine, 62ff
 toxicity to plant and animal, 110
- Epinephrine. *See* Adrenalin
- Eserine, 111, 114, 178
- Ether, 96
- Eupatorium perfoliatum,
 in malaria, 146
- Felton,
 work with pneumococcus, 52ff
- Ferments, 136
- Ferrum, 117
- Ferrum phosphoricum, 74
 in pneumonia, 76
- Fliess, 118
 studies of, on rhythmicity, 118
- Fluoric acid, 117
- Formalin, 178
- Formic acid, 92, 160
 gout, and, 139, 176
- Formicola and Macco, 134
- Fromberg, 127
- Fromherz, 107
- Galen, 44
- Gall bladder disease, 163
- Gastro-colic reflex, 164
- Gehlen and Schubel. *See* Schubel
- Gelsemium,
 in influenza, 53, 147
 effect on central nervous system, 60, 141
 toxic picture of, 141
- Generalization. *See* Hypothesis
- Germanin, 18
- Glands,
 endocrine,
 weight deviations in, 118
 lymphoid,
 weight deviations in, 118
 liver,
 weight deviations in, 118
- Gold. *See* Aurum
- Gottlieb, 108
- Gout, 139, 162
- Graphites,
 in liver disease, 161
- Hadley, 67ff
- Haeser, 44
- Hahnemann, 15, 21, 47, 79, 82, 90, 184
 contemporary medicine of, 28
 definition of true physician, 28
 drug schema of, 58
 experience with cinchona, 24, 144
 innovations in medical field, 35
 Organon of, third paragraph, 27
 pathologic physiology of, 82
 summation of medical experience, 27
- Hayfever,
 relationship to homœopathy, 52
- Health,
 definition of, 64
- d'Herelle, bacteriophage observations, 66ff
- Herpes zoster, 162
- Heubner, 124
- Hippocrates, 21, 183
- Hippocratic rules, 38
- Hober, 124

- Homœopathy,
 accidental experiences of nature exemplifying, 79
 application to particular medical problem, 149
 Arndt-Schulz generalization and, 92
 art of, 20
 basic principle of, 21, 31
 basic rule of, 21, 183
 clinical usages exemplifying, 33, 51
 definition of, 15, 108, 183, 185
 drug dilutions and, 177
 drug provings in, 79
 individualization a key note, of, 55, 153, 164
 "infinitesimals" and, 178
 in reaction of defense, 58
 Kotschau's type effect hypotheses and, 131
 analysis of, 136
 law underlying, 50, 183
 observational method, as an, 67, 148
 phase effects and, 104
 philosophy of, 64
 public health, and 166
 remedy finding principle, as a, 21, 39
 result from, 76
 school of thought, as, 41, 48
 scope of, 16
 specialism and, 164
 specialty in therapeutics, as a, 31
 success of "specifics" dependent upon, 147
 tenets of, in present day medicine, 50
- Homœotherapy. *See* Homœopathy
- Hooker, 54ff
- Hormones, 128, 138
- Hufeland, 26, 35, 46, 181
- Hutchinson, 134
 studies with adrenalin, 134
- Hydrochloric acid, 96
- Hydrophyllum, 53
- Hydroquinine,
 in chemo-therapy, 19
- Hyoscyamus,
 in acute manias, 158
- Hypophysin,
 phase effects of, 123
- Hypophysis preparations. *See also* Pituitrin
 diuretic activity of, 107, 110, 126, 127
 effect of, on uterus, 178
- Hypothesis
 Arndt-Schulz, 92
 homœopathic, 21, 31, 50
 Kotschau's type effect, 131
 analysis of, 136
 le Chatelier-Braun's, 135, 169
- Idiosyncrasy, 100
- Immunity reactions, theories of, 66ff
- Immunology, kaleidoscopic changes in, 98
- Influenza, mortality statistics of, 78
 gelsemium in, 141
- Insulin,
 blood-sugar and, 115, 138
 diuretic effect of, 127
 in diabetes, 17
- Iodine, 71, 74, 80
 as cause of glycosuria, 80
 for hyperthyroidism, 147
- Ipecac, 71. *See also* Emetine
 emetic action of, 176
 in malaria, 146

- Iridium,
 in ratin infections, 175
 in staphylococcus infections,
 175
 Isopathy, 41

 Jackson, 118
 study of sodium chloride con-
 tent of blood, 118
 Jonkhoff, 133

 Kali carbonicum, 161
 Kali phosphoricum, 117
 Kishi, 107
 Kolmer,
 studies with mercury as an
 antigen, 142
 Kotschau, 48, 96, 103, 108, 131
 discussion of high dilutions,
 180ff
 mechanistic causalism, and, 96
 principle of effective dose, and,
 129, 137
 type effect hypotheses of, 131
 Krawkow, 112
 Kylin, 115

 Lachesis, 118
 Lagowsky, 112
 Lathanum,
 in tuberculosis, 175
 Law. *See also* Hypothesis, Prin-
 ciple, *etc.*
 of inertia, 135
 Sherrington's, 171
 von Uexhull's, of muscle con-
 traction, 123
 Lead, 71
 chronic poisoning, 170
 Leathes, 56ff
 Lendel,
 investigations with sulfur, 170
 Lobelin, 102

 Lomholt,
 studies with mercury, 142
 Lycopodium, 118
 in liver disease, 161
 Lysol, 178

 Macco and Formicola, 134
 Macht, 110, 133
 Mackenzie, Sir James, 84
 MacNider, 116
 Magnesia phosphorica, 160
 Magnesium chloride,
 insulin action, effect on, 115
 Malaria,
 cinchona in, 24
 Malpighi, 26
 Martinescu, 111
 Mellon, 54ff
 Menorrhagia,
 thyroid extract in, 61
 Menstruation, 123
 altered activity in, 123
 Mercaptan, 179
 Mercury, 33, 46, 142
 amœbic dysentery, in, 146
 antigen, as an, 54ff, 142
 calcium effect of, on action of,
 116
 headache of, 160
 homœopathicity of, to syphilis,
 144
 in syphilis, 53, 142
 kidney effect of, on, 141
 microscopic changes produced
 by, 144
 parasiticide, as a, 53, 142
 Mercuric chloride,
 bacillary dysentery, in, 39
 pediculosis, in, 17
 Metchnikoff, phagocytosis theory
 of, 66ff
 Mitchell, Weir, 52

- Modality, 83, 154
 definition of, 159
- Moore and Cooper,
 studies of, on rhythmic activity, 118
- Morphine, 102, 141
 acidosis caused by, 133
 blood sugar effect of, 134
 electrical potential, influence on, 179
 heart, effect of, on, 112
 intestine, action on, 108, 114
 involuntary musculature, effect of, on, 137
 Kotschau's curves and, 133
 palliative, as a, 17
 racial susceptibility to, 156
 reaction time following, 133
 release effects, 102
 stimulation from, 176
 yeast production, effect of, on, 178
- Moro, 118
- Morse, 67
- Muchs, 56
- Muller, 89
 theory of specific sense energy, 90
- Myxœdema, 159
- Naphthalin, 178
- Naphthol, alpha beta, 178
- Narcosis. *See also* Anæsthetics
 use of amyl nitrite in, 117
- Natrum muriaticum, 118. *See also* Sodium chloride
 modality of, 161
- Nicolle, immunity studies of, 66ff
- Nicotine, 116
 on heart, 112
 effect of, on action of, 116
- Novasurol,
 diuretic activity of, 127
- Nux vomica, 60, 69, 117, 150, 154
 constitution most easily affected by, 156
 pharmacodynamics of, 150
- Omnadin, 116
 as non specific antigen, 116
- Osteomyelitis,
 phase activity in, 128
- Paracelsus, 44
- Paraldehyde, 141
- Papaverine hydrochloride, 108, 141
 on intestines, 108, 137
 on leech muscle, 137
- Pearce, 118
- Peritonitis,
 phase action in, 105
- Periodicity, 118
 importance of, in biology, 118
- Persson, 68ff
- Pharmacology, some pitfalls in
 methods of, 95
- Phase action, 104
 abstinence appearances, and, 112
 Arndt-Schulz generalization, and, 111
 artificial influencing of, 128
 clinical importance of recognition, 126
 colloidal phenomena, and, 127
 condition of experimental object, and, 107
 definition of, 105
 dose, and, 106, 129
 experimental object and, 107, 109, 110
 factors in production of, 106

- "hormonal equilibrium" and, 128, 138
 influence of fatigue upon, 109
 influence of stimuli on each other, and, 114
 periodicity, and, 118
 poison concentration, and, 111
 rule of, 106
 sudden change in poison concentration, and, 113
 temperature, and, 111
 time of year, and, 117
 universality of, 105
 washing out effect, and, 111
 Phase effects, 104. *See* Phase action
 Phenolsulphonephthalein, 101
 action of, altered by saline cathartics, 101
 Phloridzin, 80
 as cause of glycosuria, 80
 Phosphates. *See also* Phosphoric acid and Phosphorus.
 morphine effects upon blood, 134
 Phosphoric acid. *See also* Phosphates
 as an antigen, 54ff
 daily variations in excretion of, 119
 glycosuria of, 80
 in rickets, 53
 in typhoid-paratyphoid-dysentery infections, 54ff
 Phosphorus, 55ff, 71, 74, 80, 117
 as cause of glycosuria, 80
 in liver disease, 161
 in rickets, 147
 in tuberculosis, 54ff
 Physiology,
 pathologic of today, 86
 Picrotoxin,
 effect on inner ear, 133
 Pilocarpine, 116, 179
 calcium influence on, 116
 diaphoretic action of, 176
 diuretic activity of, 127
 Pituitrin. *See also* Hypophysis
 action on the heart, 111, 114
 diuretic effect, 138
 Plantago major, 53
 Pleurisy,
 central, 163
 Pneumonia, lobar, mortality statistics, 77
 clinical picture of, 74
 Podophyllum,
 in liver disease, 161
 Poliomyelitis,
 constitution affected by, 154
 Popoviciu, 111, 114
 Posology. *See* Dosage
 Potassium, 114. *See also* Kali, and compounds of
 effect on adrenalin action, 128
 Potassium bichromate, 117
 Potassium chloride,
 effect on insulin action, 115
 Potassium cyanide, 101
 Potassium iodide,
 as a specific in syphilis, 147
 Principle. *See also* Hypothesis, Law, Rule, etc.
 le Chatelier, 135, 169
 Psicain,
 effect on blood vessels, 106
 Pulsatilla, 118
 Purine derivatives,
 diuretic activity of, 127
 Quinine, 33, 71, 101, 144
 antigen, as an, 145
 chemotherapeutic agent, as a, 18

- electrical potential, influence
 on, 179
 homœopathicity of, to malaria,
 146
 in malaria, 24, 53
 specific, as a, in malaria, 144
 thyroid and, 156
 uterine musculature, effect on,
 127, 138
 Radium, 33
 Ranunculus,
 in herpes zoster, 163
 Remedy. *See also* Drugs
 definition of single, 59
 factors varying action of, 99
 use of the single, 59
 Rentz, 48, 61ff, 98, 103, 105, 113,
 118, 126, 135
 on dosage, 169
 rhythmic studies of, 118, 135
 Research, some pitfalls in, 95
 Rhus toxicodendron, 33, 83, 117,
 161
 in typhoid fever, 158, 161
 Rhythmicity, 125
 of drug action, 134
 spontaneous, in nature, 125
 Rickets,
 calcium metabolism and, 117
 Rules. *See also* Theory, and
 Hypothesis
 Hippocratic, 38
 illustrations of first, 43
 homœopathic, 21
 of phase action, 105
 of specific sense energy, 90
 Rumex crispus, 53
 Rogers and Vedder,
 work with emetine, 146
 Rosenbach,
 work with quinine, 145
 Rosin,
 work with quinine, 145
 Rynd and Myerson,
 on buccal lesions of mercury,
 143
 Sakussov, 111
 Salant, 116
 Salvarsan. *See* Arsphenamine
 Salvia officinalis, 53
 Sambucus nigra, 53
 Schlossberger, 18
 Schools of thought in medicine,
 37
 Schubel and Gehlen, 127
 quinine studies on uterus by,
 127
 Schulz, 48, 92
 rule of biologic stimulation,
 92
 examples of, 137
 Schwartz and Guttman,
 studies on dosage, 180
 Scoloczey, 127
 Seiffert, 19
 Senna, 73
 Silver chloride,
 detection of, 179
 Silver nitrate, 160
 in tar cancer, 174
 Simillimum, definition of, 161
 Sodium bicarbonate, 55, 61ff
 Sodium chloride, 118. *See also*
 Natrium muriaticum
 daily variations in excretion
 of 119
 diuretic activity of, 127
 Sodium nitrite, 178
 Sodium sulphate,
 in liver disease, 161
 Selenium,
 in tuberculosis, 175
 Solis-Cohen, 77
 Splenic extract,
 effect on blood formation, 108

- Status thymico-lymphaticus, 159
- Steffens, 46
- Stiegele, 38, 56, 86
- Stimuli. *See also* Drugs and Remedies
- phase action of 105
 - definition of, 105
 - factors in production of, 106
 - fatigue and, 109
 - importance of, to clinician, 126
 - physico-chemical influences on activity of, 124
 - rule of, 106
 - universality of, 105
 - size of, in relation to response, 169
- Stramonium,
- in acute manias, 158
- Strontium, 117
- diuretic activity of salts of, 127
- Strychnine, 62ff, 111
- effect on blood-vessels, 109
 - on heart, 112
- Sulphur,
- excretion of through skin, 170
 - in amœbic dysentery, 146
- Sulfur iodide, 161
- Susceptibility, 139. *See also* Constitution
- constitution and, 155
 - individual, 56, 154
 - racial differences in, 156
- Symptoms,
- application of basic and de-determinative at the bedside, 73
 - basic and determinative, 69, 71, 149
 - constitutional, 154
 - definition of, 17
 - evaluation of, 153
 - keynote, 164
 - mental, 154, 177
 - modality, 154, 179
 - of invasion, 58, 70ff
 - of defense, 58, 70ff
 - particular 154, 161
 - physiological mechanism of production of, 162
- Szymanski, 119
- Tabacum, 112
- abstinence symptoms of, 112
- Tanaka, 132
- Taraxacum, 101
- Tartar emetic, 71
- Terebinth, 71, 178
- Terpene hydrate, 55
- Tetany,
- calcium metabolism and, 117
- Theory. *See also* Rules, Hypothesis, and Laws
- of immunity reactions, 66ff
 - of specific sense energy, 90
- Therapy, 16
- chemo-, 18
 - homeœopathic method of, 19
 - methods of medicinal, 16
 - palliation, 16
 - parasiticial, 17
 - substitutive, 17
- Thot,
- schools of, in medicine, 37
- Thyroid extract. *See also* Thyroidin
- in menorrhagia, 61
 - in myxedœma, 17
 - on heart, 111
- Thyroidin. *See also* Thyroid extract
- action on the heart, 113
- Thyro-toxicosis, 159
- Toyama, 143
- Traube, effect of drugs on surface tension, 68ff

- studies on dosage, 179
 Trigger response, 170
 Tuberculin, 179
 Tuberculosis,
 diathesis of, 154
 ultra violet ray in, 43
 Trypaflavine,
 in chemo-therapy, 19
 Trypan blue,
 in chemo-therapy, 19
 Trypan red,
 as chemotherapeutic agent, 18
 Type Effect Hypotheses, 131
 analysis of, 136
 application to prescribing, 140
 illustrations of, 132
 principle of dose embodied
 in, 140
 relationship to homœopathic
 principle, 141
 Ucko, 115, 138
 Uexkull, 123
 law of muscle contraction of,
 123
 Uhlenbruck, 121
 rhythmic studies by, 121
 Uranium nitrate, 70, 80
 as cause of glycosuria, 80
 in nephrosis, 70
 Urethane, 101
 Vaccines, 147
 relationship to homœopathy,
 20, 33, 51
 staphylococcic, 52ff
 typhoid, 52ff
 Vaccinia, 51ff
 Veratrum album, 85, 93
 in cholera, 85, 73, 129
 in dysmenorrhœa, 85
 in tetany, 85
 Veratrum viride, 54ff, 74
 in pneumonia, 54ff
 Venoms,
 in kidney lesions, 70
 Veronal,
 effect on blood-vessels, 106
 Vesalius, 44
 Virchow, 26, 36
 as father of cellular pathology,
 28
 Vladesco, 135ff
 Voelker, 22
 Vollmer, 117
 Von Bergmann,
 functional pathology of, 85
 Von Haller, 21, 22
 Walbum, 139
 studies on dosage, 173
 Watters, 54ff
 Wesselhoeft,
 work with quinine, 145
 Wheeler, J. H., 54ff
 Whooping cough, 159
 Wiechowski, 86
 and pharmacology, 86
 Wolf-Eisner,
 theory of immune reactions of,
 67ff
 Wunderlich, 82
 Yeast,
 arsenic effect of, on, 93
 carbon dioxide production by,
 97, 178
 formic acid, effects of, on, 92
 Zeller,
 work with yeast, 178
 Zih, 108
 Zimmer, 49
 Zondek, 115, 138
 Zwick,
 on skin manifestations of
 mercury, 143





