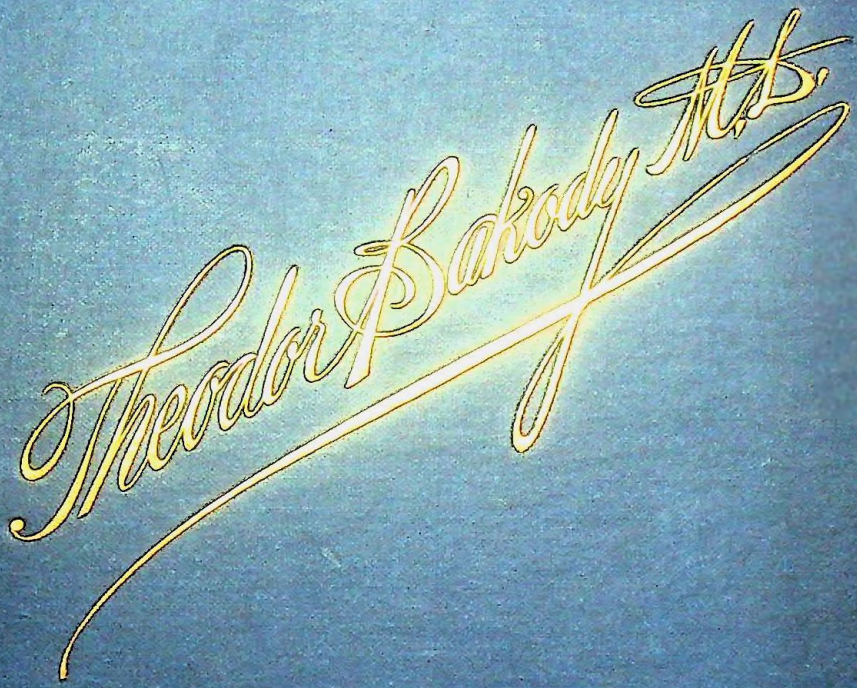
Theodor Bakody M.D.

SCIENTIFIC MEDICINE

IN ITS

RELATION TO HOMŒOPATHY.

BY

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TRANSLATED FROM THE GERMAN

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This essay, written by Prof. Theodor Bakody, of Buda-Pesth, for the *Pester Lloyd*, was originally intended for the laity. The interest awakened throughout the world by Koch's great discovery was experienced in a lively degree by all classes of men, and information concerning the new remedy was eagerly sought after by layman as well as physician.

Prof. Bakody, designing to write for the former, unconsciously wrote for the latter, and in answering the questions put to him concerning Koch's remedy touched upon such important points in therapeutics that every physician, even if not sympathizing with his views, will still give them serious consideration.

RUDOLPH F. BAUER, M.D.

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I RESPOND with pleasure to your invitation, asking me to express from my especial standpoint, my opinions concerning the widely differing views entertained regarding the value of Koch's method of treatment, and also the assertions frequently made concerning the similarity of the same to the Hahnemannian methods. You must, however, allow me to discuss the subject thoroughly; otherwise your object of explaining to the educated laity a serious scientific question will be futile. A certain preliminary knowledge, generally wanting even in the best educated of the laity, is necessary to properly understand medical and scientific questions. I must, therefore, endeavor to overcome this lack of knowledge by putting my explanations into a form which will be familiar and easily understood.

Before Rokitansky's time, the school of medicine busied itself almost exclusively with problematic hy-

potheses and theoretical pathological speculations, particularly in the branches of pathology and diagnosis. In the eighth lustrum of the present century, Rokitansky surprised the medical world with a work which attracted universal attention, entitled, *Manual of Pathological Anatomy*. I quote from this work the following remarkable passage, so that it will become clear to you what this great thinker strove to do, and what new paths his pathological school opened:

"Pathological anatomy has for its subject the deviations of the organism and the disturbances of the organs and tissues, as demonstrated by anatomical research. Its importance becomes clear to us when we place it in that relation to pathology which anatomy holds to physiology; it becomes the principal basis for a physiology of disease. Anatomy is the basis of pathology, because the manifestations of disease are subject to the same laws, and because the disease remains still a physiological condition, although a morbid one."

In the first edition of his work, Rokitansky not only declared his systematically ordered doctrine the very foundation of medical knowledge, but also promulgated therein and established for all time the thesis that a knowledge of the morbid disturbances and changes in the organs and tissues must become the basis of medicinal treatment; also that pathological anatomy was undoubtedly to be regarded as the foundation upon which a physiological pathology

rested, and was the elementary principle in natural researches pertaining to medicine. "It offers," the text continues, "a reliable, solid basis to semiology and diagnosis, and establishes a rational therapeutics based upon a thorough knowledge of morbid and curative processes." The learning and justice of this eminent scholar induced him to add, with a modesty worthy of imitation, the conditional observation, "that what he himself designated as fundamental, only pointed out for the present the possible tendency and extension of future development."

His prognostication proved true. From the macroscopic pathological anatomy developed the microscopic pathological anatomy of Virchow. The organic tissue-changes, demonstrated mainly by the naked eye by Rokitansky and his followers, were investigated still more closely by the microscopic work of Virchow and his school; the improvement in optical instruments aided these efforts. The knowledge gained by Virchow in his researches of cell-life revealed the finer elementary changes and the morbid processes going on in diseased cells, approached 600 times nearer the human eye.

Thereafter, investigators, with one accord, directed their labors to the attainment of a thorough knowledge of the cellular nature of the functions of life; and the results, collected with ant-like industry in the archives of Virchow, revealed the fact, more and more, that the delicate, jelly-like, microscopic structure, provided with a nucleus and nucleolus—the or-

ganic cell—represented an independent, anatomical physiological entity, and was the lowest form in which there was active manifestation of life. Thereby was the cell-doctrine founded, and pathological anatomy was now designated pathological histology. This cell-doctrine in its consequent application to the living organism, the organs and tissues of which simply represent a complexity of cells and their derivatives, led to the establishment of a cellular pathology and a cellular physiology.

The inductive matter obtained in this department accumulated to such an extent within the last forty years that it was hardly possible for any hypothetical pathological system to take deeper root. Medicine, as a whole, however, derived but little practical use therefrom. This, about eight years ago, induced Professor Klebs, a pupil of Virchow (and who is to be considered as the first of any importance advocating the microbe theory of disease, but who subsequently accomplished nothing of importance) to oppose his master, in one of his lectures entitled "The Changes in Medical Views Within the Last Thirty Years." With the injustice of a prejudiced thinker, he wrote, in 1878, the following: "When we consider that the old doctrine (that of cellular pathology) failed in accomplishing what was expected of it, namely, the healing of disease, it becomes my duty (the duty of a theorist) to collect all facts which may be operative in establishing a reformation in therapeutics, and give to that which has already been done in this direction

a solid foundation; for this we have labored, microscopists and experimenters, for over ten years; it shall be our duty to show that the results thus far obtained necessitate us to seek the cause of many grave diseases outside of the body, and demonstrate that the causes of disease are due to micro-organisms.

In an article entitled "The Nature and Cause of Disease," which appeared in 1880, in the 79th vol. of the *Archives*, and was devoted to the correction of Prof. Klebs, Virchow writes: "All our experience teaches us that life can only be manifested in concrete form, and is associated with certain foci of matter, these foci being the cells and cellular tissues. What is true of the individual as a whole, that, and even more so, is true of the cell. It is the central point of action of mechanical substance, and is alone capable of preserving within itself that activity which justifies the name of life. . . . . When, however, we endeavor to understand and grasp the matter there remains nothing for us but to return to the elementary constituents, and these are for the biologist the cells. . . . . Should there be diseases dependent upon changes in a single cell the treatment would have to be directed to this single cell. At present, however, in practice we have to deal, not with single cells, but with groups of cells. Each group, or in other words, each focus of disease, consists of a larger or smaller, but always of a positive mass of living cells. With this mass of elementary substance practice has to deal, and these foci are the objective points

of diagnosis as well as therapeutics. This is the true meaning of the 'localization-thought.' It would be truly foolish to expect such a local action if we did not know of the existence of special relations between certain drugs and certain portions of the body. At present it requires only an experienced hand to formulate precisely a capable work on cellular therapeutics."

This declaration of Virchow led to the belief that a cellular therapeutics based upon the cell-doctrine was to be expected, but that the author spoken of was first to be found.

As you see, here we arrive at the boundary separating two essentially different lines of thought in the practical domain of medicine.

In the foregoing explanation of Virchow, we meet the word "localization." In considering this, I must point out to you the many ways in which the word "specific" is understood, and, as we progress, you will find that the conception of this is as important to my line of reasoning as the keystone is to an arch.

You will scarcely believe that this frequently-used word, "specific," not only formerly gave rise to misconceptions, but even to-day leads to misunderstandings, in accordance with the individual interpretation of its meaning.

The understanding of "specific," has to some extent a history of development, closely allied to the development of medical science. The main principle involved is that of "individuality." Accepted in

medicine and applied to the action of drugs, those substances which were proven positively curative because of their individuality of action in certain diseases—as, for instance, china in intermittent fever—were called specifics. With the advancement of medical knowledge, and particularly through the methods of Hahnemann, it became certain that many substances acted markedly upon particular organs in preference to others, as, for instance, digitalis upon the heart, and those substances, because of their peculiar local action, were termed local-specific remedies. As a result of the experiments of the Hahnemannian school and the provings of many substances upon the healthy, the knowledge of local-specific acting remedies became greatly extended, and so was forced upon the medical mind that line of thought which Virchow expressed as the "localization-idea," and which, properly speaking, represented for medicine that which Hahnemann postulated as the specific principle. That the doctrine of specific action was cultivated solely by the method of Hahnemann is even acknowledged by Virchow. It was Hahnemann's object to discover remedies which would act upon the cause of disease; these he termed causal-specific, in contradistinction to those drugs which were given, not to remove the cause of disease, but to ameliorate painful, tormenting symptoms, and which he designated symptomatic-specific or, better still, palliative-specific remedies. If the action of a causal-specific remedy cannot be explained, then its use is

purely empyric: if, however, the action is approximately clear, then it becomes a scientific causal-specific remedy, and one which stands in peculiar intimate relation with the vital activity of the cells. The symptomatic remedies, as regards their action, can be divided into the direct and indirect, while the action of causal-specific remedies is always direct. The action of the specifics is naturally a local one, and limited to certain tissues, and thus is the designation "local action" only to be regarded as one in contradistinction to that action which influences the organism as a whole.

In vol. vi. of Virchow's *Archives* we read in an article entitled "Specifics and Their Advocates," the following: "The attention of specific homœopaths has been constantly directed to organic healing remedies, that is, those acting on certain localities. . . . But one is unable to do more, in the artificial cure of disease, than to make such use of the mechanism of the organism as to assist the equilibrium maintained by the regulatory arrangements of the body. Internal medication aims to set into action the organs of the body for the accomplishment of its purpose. To effect this, specific remedies are employed to operate upon certain regulatory organs, not always, however, to influence the diseased organ in a gentle way, but frequently enough in an inimical, antagonistic (contraria) manner. Everywhere are we compelled to attack the exponent of specifics, and yet, nevertheless, hope for the specific.

Does this not seem questionable? These expressions, however, belong to the first period of Virchow's labors. We will see how, in the course of time, his therapeutic-medical convictions in this direction were altered. In the 79th vol. of the *Archives*, in the previously-mentioned article, which was mainly directed against Klebs, he writes, under the heading of "Cause and Nature of Disease," the following: "The treatment of pneumonia is decided primarily by the fever. The clinician separates the two most important factors, the fever, and the local inflammatory process. The first brings the greater danger, the latter the least. Attention is directed to the fever, or, in other words, to a sum of disturbances which have their real seat in a certain portion of the nervous system. What we do in this direction may hardly appear cellular-therapeutic, and yet it is eminently so, for there is always behind such a disturbance a certain number of altered ganglia-cells."

In my explanation I have several times mentioned "Spontaneous Cure." Rokitansky as well as Virchow recognized as something positive the Nature cure.

This spontaneous cure (which, naturally, cannot be expected in all diseases) we will divide for present purposes simply into three classes:

I. Spontaneous cure without remedies.

II. Spontaneous cure by means of remedies.

III. Spontaneous cure despite (supposed) remedies.

The first variety runs its course (if at all possible) without any medication, and is influenced only by

dietetics and other measures calculated to bring about a spontaneous cure. This form of treatment is designated the "expectative method," a term which bears anything but that of a biological stamp.

The second variety is accomplished only then, when an operative remedy, given for the purpose, removes the cause of the disease—the action being in a line with the vital regulatory factors of the organism, and assisting the natural curative process. In this instance the natural cure is elevated, and becomes a scientific one. The third variety conforms to those cases where the cause of the disease is ignored and remedies administered, the action of which is directed to symptoms which are tormenting, or by faulty reasoning are considered dangerous. Through these remedies the organic regulatory arrangements are disturbed in their curative functions, and the true curative process—in the most favorable case—retarded, or, in a pathological-anatomical sense, completely arrested; for the biological forces, hampered as they are by the action of these palliative agents, do not always possess sufficient vital energy to overcome the cause of disease.

In this third classification belongs the treatment of pneumonia spoken of by Virchow, where not the local process but the fever, which is a natural accompaniment of the inflammation, becomes the object of medicinal treatment.

I have disputed this opinion since 1873, and in a work of mine in reference to this can be found the

following passage: "Doctor Kocher has the art of saying so much that is enticing regarding the treatment of pneumonia by antipyretics, as practiced by Prof. Biermer, of Zurich, that one finds it natural when viewed from a symptomatic-therapeutic standpoint, that it should be deemed worthy of therapeutic application in wider circles." In fact, the pulse and temperature become so greatly altered that both may sink below normal. Dyspnœa, expectoration, pain, and restlessness are diminished, but the mass of proliferated cells which fill the lungs as a result of the inflammatory process are scarcely or not at all removed.

In the *Pester Medicinisch-Chirurgical Presse*, in 1885, appeared an article entitled "A Criticism of Medical-Symptomatic Antipyresis," which I read in 1884, during the December convention of the Hungarian Biological Society, and which was accompanied by microscopic demonstration. From this I must also quote you some passages relative to that which we have in hand: "The practical physician needs a definite guiding principle for his actions, and by the selection made is distinguished even to this day the followers of Galen and those representing the tendencies of the Hippocratic school. In the course of the development of medicine we constantly meet these opposing factors, even though they be in different guise, and the ceaseless contention existing between them effects a greater perfection of therapeutics. To-day, also, we see therapeutics conducted on one hand by a

peculiar method which bases its procedures on pure observation of Nature, subordinates the laws of organic life, and keeps in view the correct mutual relationship existing between therapeutics and life. On the other hand, however, it is practiced as a curative science more after a form than after Nature, and frequently enough ignores the always just biological postulates, and strives with hair-splitting reasonings to conquer the regulatory laws of organic life."

"To prove the justice of my assertion, I will describe the course of treatment of an acute febrile diseased process, the clinical course of which is well known, and sketch more closely its rapidly changing phases. After a restraint had been placed upon bleeding in the treatment of pneumonia by the favorable results obtained by the homœopaths who were opposed to vampirism, the use of tartar emetic was introduced by the Vienna school, and was considered with great favor; the results, however, when compared with those obtained by the homœopaths, left much to be desired; so that those of a skeptical turn of mind were induced to treat the named disease on purely dietetic principles. The result obtained in regard to recovery was very favorable, inasmuch as the death-rate, which was 20.4 after bleeding, and 20.7 after the treatment by tartar emetic, fell to 7.4 by the dietetic treatment; this, however, was offset by a death-rate of 3 to 4 per cent. shown by the homœopaths. The latter employed, then as now, in the first stage of the disease, their remedies influencing the vaso-

motor nerves and vascular system, and in the stage of completed exudation, medicinal substances which favored resolution, and finally drugs which aided the energies of absorption, a method of treatment which, by its excellent results, has given them no cause to change for any other form of treatment for nearly forty years, inasmuch as nothing more was to be desired regarding the course of convalescence and complete restoration of the diseased organ."

In consequence of the satisfactory results obtained by the biological-medical therapeutics, one could have expected with justice that this method of treatment was worthy of general trial. But medical therapeutics, in consequence of the accepted antipyretic treatment, from a rationalistic standpoint, took a course diametrically opposed to the Hahnemannian. Through the accepted views regarding the nature and danger of fever, a new Galenic method arose, which, in a consequential way, looked proudly down upon the others. The results obtained by experiment and research gave to it those so-called exact scientific principles for its seemingly wise procedures, and gradually, as the theoretical views regarding febrile consumption received greater scientific recognition, the antipyretic method of treatment proportionately developed to a higher degree.

At length the bacillus theory sprang into existence, and therapeutics had to be adapted to these new pathological views. In pursuit of this new fact, the question necessarily arose, whether these low organ-

isms were the direct cause of fever, or whether they developed pyrogenic matter by their tissue changes, or by their action upon surrounding tissues; and it was concluded that even if the action of these micro-organisms, which were always present, be productive of disease, the fever still remained the most important factor for the consideration of therapeutics; this, in consequence of the newly accepted theory, led to the introduction of an antipyretic method of treatment which should at the same time be antizymotic.

Now follows the proof established by myself on pathological-physiological and pathological-chemical grounds, that the effect obtained by the antipyretic symptomatic remedies, of checking the oxidation process going on in the tissues, is injurious to the curative process. I will omit discussing this further, as it would be unintelligible to the laity, but will acquaint you with that portion of my work, in which it is proven that the harmfulness of antipyretic treatment, when regarded from the standpoint of the modern bacillus-theory, contains matter of still more serious import. As this is of interest to every educated layman, and is easily understood, and moreover deals with a fact which can be demonstrated beyond all doubt by the aid of optical instruments, I will continue by quoting the following: By the name amœba we designate microscopic protozoa, living in water, and consisting of a mass of nucleated protoplasm without a membrane, and constantly showing a change of form. The white blood-corpuscles and the cells of

the cellular tissue of the animal organism resemble these amœba, and like them are distinguished from other cells of the body by their capability of locomotion. Inasmuch as they are able during life to change their form, and are capable of motion, whereby they can permeate the tissues, they are also termed migratory cells. Locomotion is accomplished by sending out broad sprout-like projections, while others are drawn in, contract, and become shortened, so that the body of the cell crawls forward to a certain extent. Those containing large granules display much greater activity than those containing small ones; according to Landowsky's observations, 80 out of 100 of the former require but 1½ to 2 hours to travel 1 mm. over the surface of a perfectly smooth glass, while 72 out of 100 of the latter require from 3 to 6 hours to accomplish the same distance. During locomotion it frequently can be seen how the cell, before going on, accommodates itself to obstacles in its way and to a certain extent seems to feel them by means of its projections, and, while continuing on its way, an empty projection gradually forms, which, by-and-by, takes up into itself the foreign particles. That the cell develops considerable force in its progression can be determined by the fact that they are able to force their way through fibrillæ, lamellæ, and even epithelial cells.

The power of these cells to take up into themselves various bodies and digest them is termed intracellular digestion. The experiments of Metschnikoff,

conducted especially for the purpose of answering this question, showed that the amœbæ actually digested those substances which they took up into themselves which were capable of being digested; also, that the bacteria, bacilli, and fungi, which are eaten are killed and undergo more or less change. Metschnikoff therefore called these cells phagocytes.

I clearly demonstrated the principal phases of this phagocyte irritation with freshly-prepared microscopic slides during the course of the lecture.

It follows, therefore, positively, that what we term inflammation is not a passive process but is the result of the activity of living cells, when viewed from a cellular-pathological standpoint. The greater the irritation occasioned by the cause of the disease, the more intense are the reactionary manifestations—in other words, the greater is the accumulation of migratory leucocytes. The inflammatory process is therefore a struggle between the phagocytes and the local accumulation of the products of disease. Many of the bacteria are pursued by the leucocytes, and where the strength of one of the latter is insufficient to overpower the former, they frequently coalesce and form plasmodia, in order to accomplish their work. From the results obtained by the comparison of many parallel experiments, we can conclude that the original impetus of reaction against a given irritation consists in an accumulation of phagocytes around the foreign body, or around the displaced cell.

The many opinions expressed in medical literature

regarding the relation of tubercle bacilli to giant cells agree that here also the question is one of a struggle between bacilli and phagocytes.

Inasmuch as the phagocytes seem to play the most important part in inflammatory conditions, and, as we also know that the amœbæ are extremely sensitive to changes of temperature, we must pay especial attention to the biological reaction existing between the activity of phagocytes and certain degrees of temperature. As the investigations of Max Schulze teach us that the motions of leucocytes are quickened by raising the temperature 45° C., we may conclude that a febrile temperature must result in an increased activity of the phagocytes. All this tends to lead us to the conclusion that the elevated temperatures of infectious diseases assist the phagocytes in their struggle against the disease-producing microbes. The theory teaching the utility of fever is based upon the fact that the elevation of temperature exerts a beneficial effect by causing an increased activity of the phagocytes, and that these can accomplish their task more easily in a higher temperature than when their functional activity becomes weakened by an artificial lowering of the temperature.

We must therefore regard the phagocytes as the carriers of the curative forces of Nature. Koch, the master of bacteriology, admits that the bacilli are still alive in the younger giant-cells, while in the older ones they are already dead, and that the giant-cells eat and then kill the bacilli. When we regard this

matter from this standpoint it follows that in infectious diseases the disease on the whole represents a battle between two living organisms, a battle between bacteria and phagocytes.

It is understood, of course, that what I have said is applicable only to medical-symptomatic antipyresis, for the hydrotherapeutic method when rightly applied, must be considered a causal antipyretic in accordance with biological laws, inasmuch as the oxidation process going on in the tissues is increased, and not lowered by this method. The process, however, which we term inflammation in reality represents a useful agent, the action of which has a tendency to establish a healthy reaction in the animal organization, and is to be regarded, with its accompanying elevation of temperature, as a process favorable to the diseased organism and one tending to restoration of health.

What relationship, do you suppose, exists between this therapeutic view and the one assumed by Virchow? Here we plainly see how different is pathological reasoning and therapeutic reasoning.

Virchow says, as you will remember, in regard to the treatment of pneumonia, that the danger of the disease lies in the fever, and that this, above all, must be controlled. This is the conviction of the master—why, then, should we be surprised if the great mass of practicing physicians follow his footsteps? He himself says that these procedures do not appear to be cellular-therapeutic in nature, but are

nevertheless eminently so. Heavens! In accordance with this acceptation every invasion of the organism, even when due to the effects of a fatal bullet, is to be considered "cellular." To apply the cell-doctrine in such a way to therapeutics and explain cellular therapeutic action in such a manner, is a most convenient method of solving the problem of "localization." Beyond all doubt, Virchow's therapeutic views must be changed and adapted to these indisputable facts as now revealed by such microscopic organisms as the bacilli and phagocytes. A complete transformation of therapeutic opinions will, however, only occur when such men as Prof. Strassburger, Flemming, Pfitzner, Jurany, myself, and a few other new men, succeed in demonstrating to the medical world generally the natural configurations of finer morphological changes of living cells, and thereby show the wonderful vital activity of cell life. . . .

Virchow's frequently incorrect therapeutic propositions induced me to say the following in a work especially directed to him: "Despite the acknowledged value of the principles of localization by therapeutics, despite the prominence and recognizance given to the value of the facts discovered and the advantages to be derived therefrom by medicine, I cannot refrain from saying that when medicine has reached a higher stage of development by means of the paths opened by toxicology, therapeutics also, influenced to a certain extent by a mode of interpreting symptoms, and by misunderstanding the true

object of our school, may become blemished in the purity of its operations."

As a scientific follower of the doctrines of Hahnemann, I have always endeavored, in keeping with the progressive spirit of the time, to give to the same a suitable, substantial basis, and one in accordance with the scientific knowledge of the day. With the advance of science, homœopathy has only gained in importance, for the onward strides of development reveal still higher degrees of vitality. The illuminating torch of the doctrine of specifics has passed from hand to hand for nearly a century, and the "symptomatic" spirit will finally be put to flight entirely thereby. I must confess that I cannot designate Hahnemann's method the only starting-point for investigations and experiments in medicine; I therefore make the following distinctions (excluding operative work and specialties):

I. Symptomatic specific medicine, or the application of drugs on palliative principles, and not based upon the cause of disease.

II. Causal-specific medical therapeutics:

a. Homœo-therapeutics.

b. The doctrine of chemical antidotes.

c. Metallo-therapeutics.

III. The biological, not medicinal (*i.e.*, using no drugs) method:

a. Hydro-therapeutics, balneology, climatology;

b. Electro-therapeutics;

c. Massage and gymnastics.

d. Dietetic method of cure and ætiological prophylaxis.

The scientific, educated physician must clearly define these various methods of treatment, and be well versed in the proper application of each, in order to do justice to his calling; the knowledge thereof should, however, be made certain by an obligatory course established by a faculty.

All this preceding matter was necessary, in order to do justice to your questions.

Your first question, then, into which class of curative methods is Koch's system to be placed, can be answered with precision.

Koch terms his remedy a specific, and says it is specific against the tubercular processes. As you are already acquainted with my classification, it will appear correct to you, in consideration of what he himself says regarding the action of his remedy, if I add to this attribute "specific," the epithet "causal." Therefore, it is to be placed in the second class of curative methods. As we moreover know that Koch is master in his own field of investigation, that of the bacilli, and as his remedy is to be regarded as the result of combined inductive experimental methods, so far known to Koch alone, and as these are also of a biological nature, the term "scientific causal specific" cannot be denied his remedy.

Your second question is as follows: "What is my opinion of the value of Koch's remedy as a curative agent?"

This question, regarded from my standpoint, is one not so easily answered. Koch says: "The most important quality of this remedy is its specific action upon tubercular processes." In considering this question more closely, I shall keep in view only its action in tuberculosis of the lungs.

The diagnosis of this disease in the present condition of things seems greatly simplified by demonstrating the presence of the tubercle bacilli of Koch, and it is understood, of course, that the remedy is applicable only to those cases in which the sputa contain bacilli. Here, however, I must observe, that five years ago at my clinic, Dr. Baudis carefully examined the sputa of those suffering from diseased lungs, and out of 100 chronic cases the sputa of only 20.23 contained bacilli; and moreover, it is to be remarked, that in the sputa of many of those discharged as cured at the time, Dr. Baudis found bacilli, while on the other hand very many cases terminated fatally in which the sputa were proven to be free of bacilli. After many experiences of this sort, clinicians considered the statement of Koch, that his new remedy was an aid to diagnosis of the greatest importance. According to Koch, his fluid is to be used for diagnostic purposes in such cases where negative results are obtained by examination of the sputum; as it is capable of producing such a characteristic reaction, even in a dose of 0.01 when there is present any latent tubercular process, it will in doubtful cases, and in such where physical examination gives no clue to the

nature of the disorder, reveal the hidden presence of this disease. Here we are met by the question, will Koch's remedy prove itself worthy of so much importance as a criterion of disease in all cases; will there not be some intercurring cases which may mislead clinicians? This is a question of the future. On the whole, you may see that the case is not as simple as it appears. At least one thing is certain, that the clinician must absolutely keep in view all other diagnostic points in order to keep from going astray in such cases where the diagnostic aid spoken of leaves him in the lurch. Therefore we must restore to its proper place the pathological histology of tuberculosis which has been so greatly neglected in consequence of the bacillus theory, for by its assistance we are better enabled to diagnose and understand the special as well as general relations, conditions and circumstances of this disease.

In regard to this, however, we meet with considerable difficulty, as the opinions of able specialists of pathological anatomy greatly differ concerning the various morbid conditions which come under the heading of "pulmonary tuberculosis." Virchow (who, in company with his deceased friend Reinhardt, may be regarded as the originator of correct views on this subject), discovered this to his sorrow, and at the last convention of scientists at Weisbaden was so disconcerted by the confused discussion on this subject, that he left the room. Under these circumstances, we need not be surprised that the views

of practicing physicians greatly differ upon this subject. Of course, I do not here speak of the pronounced cases of phthisis met in practice. It is a very different matter to diagnosticate a cavern, and the insidious beginning of a dangerous lung affection, especially in individuals who have not the physical traits of phthisical subjects. It would be a great acquisition if Koch's remedy proved itself a reliable diagnostic guide.

Concerning the curative power of the remedy, Koch says: "Those treated in the initial stage of phthisis were all, in the course of four to six weeks, entirely free from all symptoms of the disease, so that they may be regarded as cured. Also those patients having cavities of moderate size in the lungs were greatly improved and nearly cured. . . . . In consequence of these experiences, I would like to assume," continues Koch, "that phthisis can be cured with certainty in the first stage." Koch says, "only then will this new remedy become a blessing to suffering humanity when it becomes possible to treat all cases of tuberculosis (as exactly defined by the bacillus theory) in the early stages, and when the development of the neglected serious forms of the disease is no longer possible." Would Koch write all this if he did not think so?—this industrious, secluded pioneer of science, this honest investigator cannot be treated with superficial doubt. The experimental results with which he astonished the world, and which so suddenly

produced a complete transformation of medical views, must be regarded with deserving seriousness.

This obliges us to consider carefully what he says regarding the action of his remedy. Koch asserts that his remedy does not destroy the bacilli, but that the tissues enclosing the tubercle bacilli are influenced by the action of the fluid. It is capable of acting only on living tubercular tissue and has no action on dead masses, as, for instance, those which have undergone caseous degeneration. Marked disturbances of circulation occur in the tissues which enclose the tubercles, as indicated by the visible redness and swelling, and necrotic changes occur to a greater or less degree in accordance with the manner in which the drug is allowed to act. This very peculiarity of the remedy must be carefully watched in order to take advantage of its curative action.

We here meet with a remarkable phenomenon. A remedy, praised as reliable by its discoverer, a man of truth, and accepted by the jubilant medical men with the greatest confidence as a panacea for tuberculosis, becomes an object of hostile attack on account of the many imitative curative experiments of others, and is declared by some to be a disappointment, and by others even dangerous. The intense expectation regarding the absolute positive therapeutic value of Koch's remedy was transmitted from the so-called medical world to the laity, where, in mathematical progression, it assumed such a degree of exaltation that tranquil medication became impossible. It is

not likely that a remedy will ever be found which will render us immortal, and yet, in the beginning, the strings of hope were tuned to such a pitch. Carelessness in the selection of cases, perhaps too bold procedures of some experimenters, may be the cause of the antagonistic views appearing here and there of late concerning the therapeutic value of the remedy. Does not the discoverer himself speak of the necessity of caution? The words of Michael Angelo here come to mind: "There is a statue in every block of marble, but we must hew away the superfluous." This is the task of art—even in the domain of therapeutics. For this reason I follow with the greatest interest the results of the curative experiments of Prof. Koloman Müller and Dr. Hochholt, inasmuch as they strictly individualize in the selection of their subjects for the treatment by "Tuberculin" (propose this in place of Kochine), and are very correct in their treatment of the patients. I am convinced that Koch's remedy undoubtedly deserves the highest regard, only the methodical procedures of its application must first be learned of the master. The therapeutic value of this remedy would not depreciate if we regarded the possibility that a certain fractional part of the favorable results was due to the palliative means formerly employed to assist the action of the lungs and heart (as digitalis, morphia, and the antipyretics), for in judging the action of Koch's remedy we must not forget that the biological regulatory arrangements of life do not stand

still. Statistics will clear up this matter for us later on.

In speaking of reprovings in one of my works, entitled "Karyomitosis," I said: That if we, in full accordance with biological-medical principles, expect nothing wonderful while determining the therapeutic value of a remedy, but are satisfied by sensible demands which harmonize with physiological possibilities and laws of life, we will not be disappointed in our expectations. We must never lose sight of the guiding principle of biological thought." This guiding principle I find entirely wanting in the recent pathological-anatomical autopsies of Virchow, which were made upon subjects who died after being treated by Koch's injections; for overlooking the fact that several of the cases described by Virchow must be regarded by every thinking physician as cases in which a fatal termination was inevitable, the intense local-specific action of the remedy may have hastened the end. Prof. Virchow's precise and strictly scientific demonstrations proved this an indubitable fact. Personally, I was only the more convinced by the facts laid bare by Virchow that Koch's remedy must contain a heroic specific local-acting substance. Physicians, therefore, instead of falling from their happy state of mind into one of the greatest depression in consequence of Virchow's enunciations, should give to Koch's remedy the regard it so highly deserves.

If Virchow, who to-day is but a lukewarm friend of specifics, and who, moreover, is neither a clinician

nor therapeutist, if he, as the first man making an autopsy, had viewed with a friendly eye the results of his investigations, then would medical thought have made a marked onward stride and have obtained clearer views.

The cases, however, in which experiments with the new remedy are harmless and beneficial are to be selected with the greatest care. This is only possible when the prover is skilled in diagnosis and prognosis, and is moreover a thoughtful clinician and therapeutist. Therefore, should Koch call to his followers the words of Hahnemann: "Copy after, but copy faithfully."

After Koch's remedy has been thoroughly established and recognized as one having a local-direct-causal-specific action (its action at present forming an absolute material basis for it to rest upon), and only the relations and counter-relations of the remedy are to be made evident, it is to be hoped that exact experimental researches into the finer details of the remedy will record undoubted favorable effects within the bounds of reason, and so lead to the formation of a clearer judgment. The clearness of the decision of the experimenter is proportioned to the amount of detail knowledge at his command. Competency of judgment, however, has many gradations, and only the decisions of a few may be regarded as trustworthy.

Your third question is as follows: "What relationship exists between the experimental methods of Koch and the postulated reforms of Hahnemann?"

I regret that it would lead me too far from my present purpose if I culled some thoughts from my "Hahnemann Redivivus" and interwove them with my subject. You would follow me with pleasure; there is so much contained therein which gives light to the educated layman! For Hahnemann wrote for healthy, sound minds, and was an example of medical perspicuity. His reforming principles, proclaimed a century ago, have constantly grown in importance since the time when he first appeared in *Hufeland's Journal*, in 1796. Their innate force, however, was only revealed in our time, within the last decennium. The fundamental principles of Hahnemann proved themselves to be the real forces which were urging forward the multiplication and perfection of methods. The attempt has often been made to ignore the pragmatic historical claims of right and priority to these principles, but this is no longer possible. Hahnemann is and will remain a law-giving reformer! For he who thoroughly rights the past and successfully combats the errors of his own time, and who, moreover, establishes principles for the gradual development of science, is a reformer, a prophet!

Now, to the answering of your question.

The process of crystallization, even when mental, should not be disturbed by any commotion; probably, therefore, it was not a very cautious proceeding to compare Koch with Hahnemann, and strive to identify the methods of one with those of the other.

The reformative doctrines of Hahnemann agree

with the methods of Koch in general, but do not agree in an especial manner with the details of the methodical requirements; there still remains, however, the following important points of similarity: 1. Koch, in investigating the action of his remedy, experimented with but a single substance upon the healthy organism. 2. After determining its action, he made experiments with the same substance upon the diseased organism. 3. He applied his remedy in a diluted form, as formulated by Hahnemann during his earlier labors, and as is still customary among scientific thinkers advocating his principles; that is, a dilution of such strength was used as would influence the diseased tissue, but would have no harmful effect upon the healthy structures. 4. Koch's efforts were directed to the discovery of a causal specific-remedy through combined experiment. This is in accordance with the methods of Hahnemann, but the manner of applying the remedy (by injection) is not.

It is an ominous trait of the present age to deny the justice due him, and this is the reason why progress in medicine is so slow. Meanwhile, the spirit of the Hahnemannian doctrine bursts forth at one time here, at another there; every clear, thinking mind that can trace the threads of thought which connect the past with the present, and watch their further progression, will recognize that through the influence of this great thinker the problems will slowly but surely be solved. That which I have stated, to some extent already finds its affirmation in

the fact, that at the present day it is possible to ask such a question as I have answered you. But something of still greater importance will follow in answering your fourth query.

You ask, "What is the relationship, in a more direct sense, existing between the homœopathic curative principles and the curative experiments of Koch?" To do full justice to this question, a digression is necessary.

In 1873, after being chosen professor of pathology and therapeutics, I saw that the orthodox physicians began to intrigue against me in consequence of the views which I promulgated. I attended, in company with my friend, Dr. Clotar Müller, now deceased, the 44th general convention of the Homœopathic Central Society of Germany at Buda-Pesth, at which assembly the foreign advocates of my theories were well represented. As president of the assembly I announced openly and unreservedly, in the form of an opening speech, the position which I took as a member of the faculty, and what I deemed necessary of acceptance for the scientific development of my especial branch, and solemnly declared that I considered the doctrine of specifics in the Hahnemannian sense as the central point of my labors, and one which, on the whole, tended in our direction, but that I subordinated the specific law of similarity to the former, inasmuch as the law of similars is embraced as one of lesser extension within the more universal law of specifics. That the law of specifics was no longer unknown to the

medical world, inasmuch as every physician was acquainted with the existence of remedies which, when taken into the system, show a constant and peculiar affinity to certain tissues, and thereby cause a peculiar alteration in the anatomical structure and function of the part. But that the fact that these changes frequently occurred on the principle of the law of similars, as yet awaited general recognition. In the second place, that I designate this law of similarity as a strictly causal one, and no longer wished to see it dealt with in a superficial manner; that in making drug provings we should not be satisfied with the manifestation of mere subjective or general functional symptoms, but in accordance with the scientific knowledge of our day also include in the field of our observations the finer pathological-physiological, anatomical and chemical manifestations. The specific relations of single drugs to the various tissues must be closely studied, and their genetic changes noted, so that the nature of artificial drug diseases may be better and more clearly understood. In other words, drug provings should rest upon a cellular-pathological basis, and, supported by pathological physiology, develop into a cellular-therapeutics. In the third place, that it must be acknowledged that the fundamental thought of Hahnemann's *Organon* clearly expresses, that not homœopaths, in a restricted sense, are to be formed, but physicians, who know how to apply a proper remedy in a proper way. In the fourth place, that the dilution of medicine should not

be carried to a point beyond scientific recognition, and that the proper application of our direct causal acting remedies consists in using them in such strength and quantity that they will act only on the diseased tissues and leave the healthy ones intact. Finally, that I do not consider the biological-medical therapeutics of Hahnemann a universal one, inasmuch as it covers only that department of practical activity where medicinal therapeutic causal cures can be effected.

This address, at the time, was considered as a doubtful achievement in the history of homœopathy. In my reply to this attack, I expressed the opinion plainly, that my address might possibly also be regarded as an achievement in the history of general medicine.

Conformably with the views just expressed, I declared, as shown in my open letter to Virchow, entitled "The Reform of Medical Therapeutics," that the idea from which the word homœopathy sprang, is furthermore only applicable to our peculiar experimental pathology, the object of which is to compare genetically the artificial drug diseases with natural diseases, they having generated, according to a hypothesis, from causes which act in a similar manner; and that to the therapeutics evolved from this pathology, another name than the one now in vogue should be given.

As a transition to another name to be determined upon later on, it should be called homœo-therapeutics.

From all that has been said, it is evident that I regard only the fundamental principles of the great reformer, aided by all the scientific knowledge of the day, as the true basis for the scientific development of homœopathy; I therefore considered it my duty to present to competent circles this method which I advocate and which is so misunderstood, freed from all impurities, and therefore have based the methods of Hahnemann upon the four following fundamental principles:

I. Experimental provings with single remedies upon the healthy animal organism, and in continually increased doses; with the recognition of all functional pathological-physiological, pathological-histological, chemical and toxical changes.

II. A thorough genetic comparison of these changes with the corresponding changes occurring in natural disease, and hypothetically due to the same cause.

III. The application of but a single remedy for therapeutic purposes, and one in accordance with the laws of similarity as taught by preceding experiments on the healthy organism, it being a causal specific action on the tissues resembling the various genetic phases of the corresponding diseases of the tissues.

IV. The application of the causal-specific remedy in such a manner and dose as will answer the therapeutic purposes without causing any accompanying pathogenic action upon the healthy tissues.

For the purpose of obtaining these therapeutic results, I established six degrees of attenuation accord-

ing to the decimal scale, the quantitative relations being as follows:

I degree contains	0.1	gramme of the principle.			
II degree contains	0.01	"	"	"	
III "	"	0.001	"	"	"
IV "	"	0.0001	"	"	"
V "	"	0.00001	"	"	"
VI "	"	0.000001	"	"	"

The shibboleth, *similia similibus*, I formulate as follows: "After the combined inductive empyric method of Hahnemann, such drugs are used (in relatively small doses) as curative agents, in accordance with the genetic phases of the internal morbid processes, which will effect in a specific (direct, local) manner those tissues in the diseased organism, which are affected when the drug is introduced for experimental purposes (in relatively larger doses), and which is capable of producing pathological, physiological and histological changes similar to those occurring in the disease.

These principles of reform have borne good fruit; for instance, for the last five years, lectures have been given on the doctrines of Hahnemann at the University of Greifswald.

In order to be better enabled to answer your question, it is necessary for me to add the following in regard to the differentiations I have established in the theory of specific action. Hahnemann in his time made a distinction between remedies having a posi-

tively curative action and those which were problematic. The first he termed specifics. In this class he placed china. In order to better understand the action of these specifics, and in order to discover new ones, he established the principle that they, as far as their former action was concerned, should be proven on the healthy organism. The provings which he made with china upon himself while in a healthy condition, produced several symptoms characteristic of intermittent fever. In accordance with his newly established principles of similarity, he termed china, which positively cures intermittent fever, a homœopathic remedy for certain forms of intermittent fever, inasmuch as it produced on the healthy organism a similar disorder. Subsequent experiments record no reliable proving producing a true intermittent febrile attack. As the nature of intermittent fever was not known until 1884, the action of the remedy could not be explained. It was only demonstrated within the last few years that the blood of ague patients contained micrococci and also annular bodies, some motionless, others provided with flagellæ which are in constant motion, the body meanwhile assuming the most curious shapes, and finally returning to its original round form. The infection of the blood by these malarial agents is productive of intermittent fever. The injection of the smallest quantity of blood drawn from a subject suffering from ague, will produce, as shown by experiment, an actual well-developed form of the disease. The invasion of the sys-

tem by these specific bacilli occurs through the lungs, and may be very slow in nature.

Even strong, healthy individuals, who are capable of great resistance to disease, may be infected in a chronic manner by living in a malarial region. These bacilli, when once introduced into the circulation, may, without producing any marked immediate action, accumulate in the spleen and remain quiescent for some time until finally, by some internal or external cause, they are driven violently into the circulation. Recent clinical experiences show that individuals who have had an attack of ague and have not completely recovered therefrom, may be suddenly seized with a paroxysm of intermittent fever after the administration of quinine for some other disease; the specific intermittent action of the quinine, and its relation to the nervous system and these microscopic bearers of contagion caused the still latent bacilli to be forced into the circulation, the following reaction of the organism resulting in a typical paroxysm of fever. The nervous system, stimulated by the action of the quinine, drives the dormant bacilli into the circulation, and an attack of intermittent fever is the result. Many such experiences have been lately recorded. This indisputably indicates that in intermittent fever there exists a causal relationship between the nervous system and the microbes producing the disease. Quinine is moreover curative because it destroys and makes impotent the bacilli causing the disease. Hahnemann, who resided a long time at Sieben-

bürgen, as family physician to Baron v. Bruckenthal, may have, by inhaling the air of the Hungarian swamps, taken into his system a large number of these bacilli, which, collecting in the spleen, produced but slight disturbances in one of his sturdy constitution, until he began his proving of cinchona, when the dormant micro-organisms of malaria, driven into the circulation, produced the symptoms of intermittent fever which he recorded. Although cinchona and quinine are valuable specific homœopathic remedies for innumerable diseases, they cannot be regarded wholly as such in intermittent fever.

Phosphorus has a specific homœopathic action in certain diseases of the bones. Kassovitz proved this conclusively from a histogenetic standpoint, in *Zeitschrift für Klinische Medicin*, he showing that phosphorus when introduced into the circulation of growing animals in large doses, produced changes in the osseous structures (as demonstrated by the microscope) similar to those occurring in morbid processes which he cured by small doses of the same drug with the greatest success.

Arsenic is a similarly homœopathic specific remedy in cholera. Virchow says, in the 47th vol. of his *Archives*, that in arsenic poisoning there are severe pains in the abdomen, great thirst, constant diarrhœa and vomiting, small, scarcely perceptible, pulse, very weak heart-sounds, cyanosis of the face and lips, with quick respiration, and, particularly in experiments, very cold skin, subsultus tendinum,

cramps in the calves of the legs; so that all the symptoms of cholera are presented, and, moreover, microscopic and macroscopic investigations show the same pathological-anatomical-histological changes in the bowel as occur in cholera. "It requires," he continues, "no further demonstration to show how similar are the changes occurring in arsenic poisoning and those presented by cholera." Arsenic, therefore, produces in large doses not only the general functional symptoms of cholera, but also shows (in accordance with my postulated method of proving) those pathological-histological genetic changes in the diseased mucous membrane of the bowel, which, in small doses in an actual case of cholera, it is capable of curing.

We will now consider what relation the action of Koch's remedy holds to this question, and, guided by the expressions of Prof. Koch himself, seek to answer the same.

Koch describes the discovery of the new remedy in the following manner: Inoculation with purely cultivated, living tubercle bacilli produces different symptoms in healthy guinea-pigs than in those already infected by tuberculosis. In healthy guinea-pigs an ulcerating spot is formed in the skin which remains throughout the life of the animal. In guinea-pigs already infected by tuberculosis, the skin in a diameter of 0.05 surrounding the spot of inoculation becomes darkly discolored; at the point of inoculation the skin becomes necrotic, leaving behind a

superficial ulcer which heals permanently, without having infected the adjacent lymphatic glands. But the behavior of tubercle bacilli which are dead and which have been triturated and washed in water, is very different. Inoculation of healthy guinea-pigs with this fluid produces local suppuration, while tuberculous guinea-pigs are killed. If, however, the dose is so far diminished that the animal remains alive, there is developed a necrosis of the skin in the region of inoculation; if, however, the fluid is still further diluted, marked improvement is noticed in the wound of inoculation; it grows smaller and cicatrizes (which never occurs without such treatment), and the lymphatic glands which were previously swollen diminish in size. The use of these dilutions of dead tubercle bacilli was accompanied, however, by these unfavorable circumstances, that the tubercle bacilli remained at the point of infection and were not absorbed, whereby they produced suppuration. Koch, therefore, concluded that the curative principle was a soluble substance, which was dissolved by the fluids of the body environing the tubercle bacilli and brought pretty rapidly into the general circulation, while the substratum causative of suppuration remained behind in the tubercle bacilli. Koch endeavored, therefore, to abstract the curative agent itself from the destroyed tubercle bacilli. Finally he succeeded in obtaining a 40–50 per cent. glycerine solution of the substance from the tubercle bacilli, which he forthwith tested on men and

animals. Koch's remedy for tuberculosis is therefore a glycerine extract obtained from the pure culture of tubercle bacilli. This fluid, made turbid by substances which are innocuous to the human organism, may be further purified by manipulation with alcohol, but this may be omitted because of the expense. Koch says at present only theories can be formed regarding the composition of the effective agent. He considers it a derivative of albuminoid bodies, and places it in the group of the so-called toxalbumens, remarking that the quantity of the active agent in the extract is very small—he considering it a fractional part of 1 per cent. Koch says: "If my supposition is correct, we have to deal with a substance the action of which in tubercular diseased organisms far exceeds that of the most powerful medicinal agents known to us."

The results of experiments on the healthy organism and the curative process Koch describes as follows: "The symptoms occurring in healthy man I have experienced myself; they are briefly as follows: Three or four hours after the injection drawing pains in the limbs, lassitude, inclination to cough, oppression of breathing, these rapidly increasing in severity: during the fifth hour a remarkably violent shaking chill occurred, lasting nearly one hour; at the same time there was present nausea, vomiting, and rise of temperature to 39.6°. After about twelve hours there was an amelioration of all these symptoms, the temperature sank, and on the following day reached

normal; heaviness in the limbs and lassitude continued for several days. The manifestations, however, are entirely different when the same quantity of the remedy is injected into a tuberculous subject. Then there occurs a violent general and also local reaction. To children we gave 0.001, and, if very weak, only 0.0005 ccm., and have thereby obtained a very strong but not alarming reaction. The general reaction consists in a febrile attack, generally beginning with rigor, the temperature rising above 39°, often to 40°, and even to 41°; at the same time there is present pain in the limbs, irritation to cough, great lassitude, frequent nausea and vomiting." These symptoms are only general symptoms, for they occur in various forms of disease. In regard to the local changes Koch says: "The local reaction can be observed in such cases where the tubercular disease is visible, for instance lupous ulceration of the skin. Here are noticed changes which show the specific anti-tubercular action of the remedy in a most surprising manner. The lupous places begin to swell and redden, usually even before the onset of the chill. During the fever swelling and redness increase more and more, and may attain a high degree of intensity, so that the lupous tissue becomes brownish-red and necrotic. At more sharply defined foci of lupus the greatly swollen and brownish-red discolored spot was frequently surrounded by a whitish zone nearly a centimetre broad, and this again circumscribed by a broad, intensely red margin. After sub-

sidence of the fever the swelling of the lupous places gradually decreases, and after two or three days may have entirely disappeared. The lupous centres are covered with crusts consisting of the exudated serum which has become dry by exposure to the air. After two or three weeks these crusts, which have become very thick, fall off and leave occasionally, even after but one injection, a smooth, red cicatrix. It is to be considered of especial importance that the changes just described are limited exclusively to those portions of the skin affected by lupus; even the smallest and apparently most insignificant nodule hidden away in the cicatricial tissue is attacked by the process, and becomes visible in consequence of the swelling and change of color, while on the other hand the cicatricial tissue proper, in which all the lupous changes have occurred, remains intact. The observation of a patient suffering from lupus, who is treated by this agent, is so instructive, and, at the same time, so convincing in regard to the specific nature of the remedy, that every one wishing to make use of it, should first begin his experiments, if at all possible, with the treatment of lupus. Reaction in the lungs cannot be observed, unless one considers increased cough and expectoration after the first injection in those suffering from lung affections as a local reaction. In such cases the general reaction predominates. At the same time, one must assume that here also the same changes occur, as are directly observed in lupus. The manifestations of reaction

here described have occurred without exception in all experiments so far made after a dose of 0.01 ccm. if there was present any tubercular process whatever in the body."

Lately, Prof. Koch described the specific action of his remedy upon tubercular tissues as follows: He establishes the fact that tubercle bacilli in their development in living tissue, as well as when cultured artificially, produce certain substances, which in various ways act in a harmful manner upon the cells; among these substances there is one which destroys protoplasm, thereby causing cheesy degeneration; in these cheesy masses the bacilli, deprived of those conditions necessary to their activity, no longer increase but die. In the small, gray, newly developed tubercular tissue, a large number of bacilli are found; while, on the other hand, they are entirely absent in the large, whitish centres which have undergone all the changes of cheesy degeneration. The protoplasm destroying action of the substance is limited, for as soon as the degenerative changes have reached a certain point, the tubercle bacilli decrease in number, and thus their production of this destroying substance becomes less or ceases. In this manner a certain degree of compensation is established, thus causing the extension of the bacilli centres to be so greatly limited. It follows, therefore, that if we artificially bring about a destruction of the cells environing such bacillus foci by introducing the destructive agent, the necrotic changes will be much more extended, and

the bacilli will also be destroyed, inasmuch as the conditions necessary to their life become unfavorable. Finally, the destroyed tissue will disintegrate, and becoming separated, will, under favorable circumstances, be expelled, thus carrying along with it the enclosed bacilli. At all events the vital activity of the bacilli will be so disturbed, that they are much more apt to die than under ordinary circumstances. According to Koch, the curative action of the remedy seems to consist in the production of such changes. It contains a certain quantity of that substance spoken of, which causes a destruction of the cells. A relatively larger dose of this substance, given to a healthy subject, also causes an irritation of certain elementary tissues, thereby producing fever and the whole peculiar complex of symptoms, without causing any further harm. In a tuberculous subject, however, it requires a much smaller dose of the same substance to act upon certain diseased localities (where the tubercle bacilli vegetate in the tissues and impregnate their surroundings with their destructive products), and cause a more or less extensive necrosis of the cells, and thereby indirectly a destruction of the bacilli.

In view of this explanation I am enabled to make the positive assertion that I regard Koch's method an exact scientific confirmation in vindication of isopathy. The latter, as is well known, is a branch deviating from the more advanced Hahnemannian principles, and extends far beyond the limits of the

law of similarity. Hahnemann's principle is Homio-Pathos (similar disease), that of isopathy is Iso-Pathos (same disease). Isopathy was founded upon a theory, which, at that time, found no scientific support, namely, that contagious diseases contain in the medium of contagion self-curative substances. To this bold, unproven, and greatly ridiculed hypothesis a scientific aspect has been given by the sagacity of Koch's methods. Accordingly, Koch is to be regarded as the scientific founder of the isopathic doctrine, which (if we classify the various medical doctrines according to the guiding principle of their investigations) must be placed in the category of causal-specific medical therapeutics, and be known as iso-therapeutics.

Jenner's method, that of vaccination, is at present only a prophylactic measure against smallpox. The future will tell whether or no this talented German investigator, in pursuing these newly opened paths, will not succeed in making it also a curative agent. Pasteur is accomplishing a similar object in another direction.

The answer to your fifth question, "What changes in medical opinion generally is to be expected in consequence of Koch's discovery?" is perfectly clear. Inasmuch as Koch's method is founded upon a new pathological fact, the bacillus doctrine, which, as a basis of pathology, demands an entirely new line of thought, it must, despite its partial resemblance to the fixed Hahnemannian experimental principles be

regarded as an entirely new method. To the view expressed by Prof. Koloman Mueller in one of his lectures, "that from it will emanate incalculable new patient studies and experiments, and that also in the treatment of other diseases, imitative efforts in the same direction will be made and finally bear good fruit," I add the hope that it will be fruitful of good to the whole medical world.

Koch's method, as has been already stated, is rooted in homœopathic soil; his effort is essentially one in accordance with the Hahemannian principle, which seeks after causal-specific remedies; there is, however, only a resemblance between the two as Koch's method becomes more fully developed; it however discloses new and previously unknown views, and thus causes a most surprising advancement of medical therapeutics; for it is a fact, that medicine, which is in a constant state of development, has just as many roots, all of which collectively aid its advancement, as there are fields for biological study and methods of investigation. Above all, Koch's method will be of the greatest service in aiding to explain to medicine the important law of specifics. As regards the rest, it is highly probable that Koch's unexpected appearance will cause the specific-symptomatic, palliative treatment, so harmful in diseases of the lungs to totter, and will give this method, at least in these forms of disease its death-blow; if this is happily accomplished, it will be a great blessing to suffering humanity, and a wonderful transformation of medical

opinion will have to be recorded, for which we can alone be thankful to the suddenly introduced methods of Koch. It is to be hoped that enduring good will be derived therefrom.

While speaking of symptomatic treatment, I must state that I personally, as a true follower of the Hahnemannian tendencies, practically, as well as theoretically, reject symptomatic remedies, both as regards the patient, as well as myself. It is my object to act upon the cause of disease by causal-specific remedies, and not simply cause an amelioration of annoying symptoms arising therefrom. Cough and expectoration, therefore, do not become an object of treatment; the same is true of elevation of temperature. For I regard the so-called symptom of disease a curative symptom in the majority of internal diseases. This harmonizes with the method of Koch.

In saying this, I have unwittingly come upon the last question you ask, which is as follows: "What relation do your methods, especially in diseases of the lungs, hold to those of Koch?"

I have always made diseases of the lungs an especial object of investigation, and have made many pathological-histological researches in this field of labor. Professor Arnold (from whom Koch declares he first derived the idea of coagulation-necrosis) says in his "Contributions to the Anatomy of Miliary Tuberculosis" (*Virchow's Archives*, vol. 88), "through the investigations of Virchow, Colbert and Bakody

we have learned the nature and development of miliary tubercle of the lungs, and through those of Deichler, Rindfleisch and Bakody, that of the nodule affecting the adventitia of the bloodvessels." I believe, therefore, that I have accomplished something useful by my histological-researches, and am therefore justified in calling myself a specialist (in the restricted sense), and of speaking authoritatively on the subject, despite the fact that twenty-five years ago I opposed the hypothesis which could not at that time be proven, that there was present in the alveoli of the lungs a layer of epithelial cells, since then discovered by the advancement in knowledge of staining materials.

Even as late as the 13th of November, 1890, Koch says in the Berlin *Medical Weekly:* "In what manner the curative process is accomplished cannot at present be definitely stated, as the necessary histological investigations have not been made." Less than three months thereafter, supported by Weigert, he attempted to give a histological explanation of his method, the substance of which any expert histologist might have guessed; but still this explanation could not be called a very exact one. At all events the conclusion could be drawn therefrom, that his remedy does not destroy the bacilli directly, but does so only by its action upon the tubercular tissue impregnated by the remedy, and that it has no action whatever on cheesy degenerated masses.

I will now endeavor to explain more closely the

action of the remedy employed by me almost without exception in cases of chronic affections of the lungs. The remedy is phosphorus. The quantity of this agent in 10 grammes of the solution is exactly 0.00001 gramme. The quantity of the active principle in this dose is about equal to that of Koch's remedy, the more so, as he latterly says that the quantity of the active principle present in the extract fluid is to be reckoned in all probability as only a fractional part of 1 per cent. According to the hypothesis which I have formed regarding the action of phosphorus, it aids as soon as it is taken up into the circulation the natural curative retrogressive, fatty changes occurring in those diseased foci which can be reached by the circulation; these necrobiotic changes are followed partly here and there by cheesy degeneration or tyrosis proper, the latter forming a part of Weigert-Koch's coagulation-necrosis. The finely degenerated tissues, converted into molecular detritus and now rendered innocuous and capable of being absorbed, are carried by the lymphatic vessels of the lungs into the general circulation and burnt up, thereby generating a febrile temperature. As much of the remaining tissue as possible is removed by expectoration through the energy remaining intact in all the mechanical agents of the lungs. Even after the discovery of the tubercle bacilli, I have to alter nothing concerning this pharmaco-dynamic theory.

I have frequently enough microscopically studied

the acute lobular infiltrations occurring after phosphorus poisoning, and have watched the development of the numerous small insular foci of infiltration, which are surrounded by a red zone, and have found, that in consequence of the necrobiotic disintegration, this red zone, which is due to capillary extravasation, and also the cell elements contained therein have succumbed partly to cheesy, partly to fatty degeneration. This action of phosphorus, which is so destructive to the anatomical structure of the lung tissue after a large dose, is the homœopathic causal indication for its use in small doses.

The above-mentioned cheesy masses, foci, no matter whether they appear in the smallest bronchioles, or in these and in the air vesicles, of which there are about 1800 millions in the lungs, are, however, not composed throughout of a single variety of cell, and exhibit very different relations while passing through the degenerative changes, in accordance as the cells are of a higher or lower order. Thus, for instance, the white, as well as the sparingly occurring red blood corpuscles and also the extremely delicate non-nucleated epithelial cells of the alveoli (which can be demonstrated by the microscope by means of aniline, and to which is also due the discovery of the bacilli), all these undergo complete fatty metamorphosis; the body of the so-called ciliated epithelial cell only partly succumbs to fatty degeneration, while the cilia, which constantly expel foreign mechanical matters from the bronchioles by their marvellous, untiring,

whirling activity, undergo complete fatty metamorphosis. All these cells easily and rapidly undergo fatty degeneration, so that in their removal they may be carried through the lymphatic vessels which have absorbed them without injuring their delicate walls. But an infinitely larger number of other cell forms are in themselves not capable of undergoing this pure and genuine fatty degeneration, but become the chief elements of those cheesy masses spoken of. To act upon these is the chief task of the therapeutist. For instance, many of the older giant cells undergo at first only partial fatty degeneration, which appears to be completed only then, when, as it appears from Professor Koch's recent explanation, the irritation formerly caused by the presence of the now dead bacillus ceases to act. By all this I only wished to indicate to you that the term coagulation-necrosis is not applicable to the whole mass of cells which are passing through the various forms of retrogressive metamorphosis. Such masses consist of cells, some of which have undergone fatty, others cheesy degeneration, the latter being the coagulation-necrosis spoken of. We are, therefore, justified, after closer investigation of the histological details, in aiding, by means of medicine, the fatty changes commenced by nature, in order to accomplish the removal of the fat molecules. Phosphorus, as already stated, does this. The general vital energy of the functions of the lungs must, whenever necessary, be assisted by the use of arsenic, which greatly stimulates the activity of the

absorbing lymphatic vessels. The removal of those degenerated tissue elements, which are capable of being discharged by expectoration, is greatly aided by stimulation of the nerves of the delicate organic muscular apparatus of the bronchioles through the direct action of our causal specific remedies, and thus the automatic curative efforts of the organism are supported in every direction.

The large number of cases of lung diseases treated at my clinics, offers favorable material for statistic conclusions. Moreover, the strict classification of cases obtained by the most exact methods of diagnosis, place my statistic results beyond all doubt. I have always kept in view the more or less similar local pathological-anatomical basis of the various disorders, and especially the many pathological-anatomical complications and their various stages of development, and I may say, that the curative results obtained by me in diseases of the lungs are relatively good.

Prof. Koch says: "In many cases I have received the distinct impression that the care given the patient was an important factor influencing the curative results," and he gives preference to such institutions where careful observations and the necessary nursing of the patient can be readily carried out.

That the curative results obtained by a similar method of treatment greatly varies in accordance with the circumstances surrounding the patients, is demonstrated by comparing the statistics of the old city hospital of St. Rochus with those of Bethesda,

where, six years ago, I was chief of the hospital, and where the patients were subjected to the same methods of treatment. Comparisons show the following death-rate: Acute and cheesy bronchiolitic disease, in Rochus, 0.26; in Bethesda, 0.41; acute cellular infiltration of the lungs, in Rochus, 5.07; in Bethesda, 5.73; chronic cheesy forms of infiltration, in Rochus, 30.23; in Bethesda, 17.43; phthisis with cavities, in Rochus, 74.60; in Bethesda, 53.50; general tuberculosis (other organs also affected), in Rochus, 84.30; in Bethesda, 40.74. It may be seen from this how difficulty it is to properly judge the value of statistics and deduct correct conclusions therefrom. At that time I therefore wrote regarding these statistics, that the numeric method should not take into consideration solely the figures upon which it was based, but that if it is to become a potent factor of judgment, it should also endeavor to fix the value of the numbers given.

Conscientious, scientific, reliable observations will give us more precise, and thus more sufficient material by which the value of Koch's remedy can be determined by statistic comparison.

In conclusion I would like to add the following: After I had been appointed Professor of Homœotherapeutics, the following toast was proposed by a Polish physician at the general assembly of German homœopaths, which met at Vienna in 1873.

"Hungary is the wall and breastwork upon which Turkish desires of supremacy were shattered. For years it struggled against heathen barbarism and

saved the German fields and provinces from destruction. Hungary received in return the germs of scientific knowledge from Germany. By careful culture and protection of the German seed we now see the doctrine of Hahnemann flourishing as a sturdy tree! To Hungary was reserved, by the facultative culture of this doctrine, the honor of strictly defining its scientific value; may this splendid fruit develop still more magnificently in German soil!"

The hope of this inspired disciple of Hahnemann has been fulfilled; for five years Prof Hugo Schulz, of the University of Griefswald, has adapted the Hahnemannian principles to cellular therapeutics, and has cultivated this branch in entire accordance with my views. I am well aware that Prof. Schulz's position in regard to this question is, in Germany, a very difficult one; therefore, he hesitates as yet to pronounce the pass-word "Hahnemann," but as soon as he is enabled as a competent authority to overcome the obstacles which act as opposing factors to science proper, and when he will have pointed out the glaring difference existing between the lay practice of this method, which is so common in Germany, and a serious scientific cultivation of the Hahnemannian principles, then will he openly continue the labors of that man of whom all Germany will some day be proud. His first duty is, therefore, to boldly declare that an idea developed in a thinking brain can never be entirely lost, inasmuch as the germs of truth are hidden therein, and as every reformer is under the influence of the age in which he lives, the new

thought, by the admixture of secondary matters, carries in itself errors due to the deficiencies of that age. On the other hand, it must also be acknowledged that the original fundamental principles of the method introduced by Hahnemann in 1795 were not ephemeral manifestations in the development of medicine, but are still to this day progressive, reforming factors.

The connecting links which will unite Germany to the doctrines of Hahnemann are now being forged at Greifswald, and no human hand will be able to destroy them.

But that this is so, is alone due to the munificence of the Hungarian legislative bodies; I would like to have this fact made known and acknowledged far and wide. In the course of time it will become constantly clearer that the fundamental principles of homœo-therapeutics which have been restored their proper rights in Hungary through facultative representation, have exerted a beneficial influence, inasmuch as through my labors a stimulation, international in character, has been given, the influence of which will extend abroad and be felt for some time. I however look back upon my former activity with happy satisfaction, for I can say, with a good conscience, that I have honestly labored in contributing my share to that which may lead to a proper understanding of this great question.

Dixi et salvavi animan meam.

Budapest, January 21, 1891.

Prof. Dr. Theodor Bakody.