

a recognized expert in it; if he sticks to it and magnifies it; if he makes his place indispensable to the community around him, the first point to which the citizens resort for help in an emergency, an unfailing center of courtesy and favor—he may fill his window with toilet soap, or monkeys, or with nothing at all—there will still be a trodden path up to his door.

Gentlemen, you have chosen as your life work a profession that I believe to be indispensable to human welfare—one of enviable tradition and honor and with standing and reputation in the community that set it apart, in some degree from all others. And while I would not have you neglect the material success that it may bring you, I would urge you to expect this as a result rather than strive for it as an immediate end. I would have you labor to maintain and develop the special knowledge that you have gained in this institution, to hold up the standard of courtesy and helpfulness under which you can best do public service, confident that if you do these things, business standing and financial success will also be added unto you.

THE SCIENCE OF PHENOMENA.*

J. ROEMER.

An interesting presentation relating to the "Science of Phenomena, as applied to drugs, basing the action of such on the energy within the atoms and molecules, which through electro-motive forces of the body in reaction is transformed into kinetic energy, resulting in the Phenomena of Drug Action."

In presenting the subject, "The Science of Phenomena," it may appear that the title is inadmissible, according to the usual interpretations accredited to science and that there is an error in its meaning, but an analysis will prove that such is not so and moreover that previous scientific interpretations are inadequate in explanation.

That explanation of phenomena has always been the objective of science is manifest from investigation of methods employed in endeavors of explanation in the realms of its varied applications in search for truth, but that it in itself can become and is the ultimate science, has until recently not received the recognition that it merits.

Phenomena of science are the accumulated array of facts which through investigation and research are continuously amassing without consistent or reasonable co-relations to one another and therefore unless it finds the means to relate and co-relate these phenomena as concepts to the mind progress is slow, therefore in designating the subject, "*The Science of Phenomena*," we not only postulate a title but open up a channel to the better understanding of their relations.

* Read before New York Branch, A. Ph. A.

The subject becomes one of direct concern to all manifestations as presented in the universe, but whether from cause to effect or from effect to cause cannot be fully known without a clear conception as to *why* of all.

That this great and momentous question is ever and ever farther removed from the immediate knowledge of man is axiomatic, for the greater increase of that knowledge ever becomes the incentive to ever greater research.

In order to thoroughly encompass facts deducible as knowledge, we must formulate a starting point and follow a procedure of correct interpretation, then safely conclude that from out of all confusion we will yet see the light in answer to that greatest of all questions concerning science, the *why* of things.

The subject as "*The Science of Phenomena*" finds application to all that is, but the object in this presentation is to restrict and confine its application to that division of science which relates to medicine and to the accepted designation, pharmacology.

To answer the question *why* is the object of all investigation and research and until today there is no definite answer to much that concerns medicine.

As postulate to a starting point we must begin with mind and likewise following phenomena through their varied phases must also end with mind.

The mind operates through a controlling force; that which it apprehends is a concept, apprehension itself is a result of perception and perception a result of conscious sensory impression, and knowledge becomes the direct manifestation of this phase system.

Without a something to apprehend there would be no need of mind, much less a use, and to supply that something in its widest, broadest and most comprehensive latitude we will accept it as the universe and all the manifestations as concepts conveyed or imparted by whatever forces may operate we will name phenomena.

These then become the fundamentals which to the mind we must relate and co-relate and by successive steps through interpretations prove the greatest of all questions.

We can know phenomena *as manifestations only by physical aspects which result from inherent physical properties.*

Physical properties, however determined, are cause per se of phenomena and in light of known knowledge are nothing more and nothing less than *natural properties*, it is therefore axiomatic that by and through natural properties alone can we obtain knowledge.

As human beings and the more so as scientists we are concerned with correct interpretations, we cannot create, we cannot alter, we cannot destroy, we are ourselves wholly controlled by what we know to be fundamental natural laws; these laws, through invariability and immutability in operation give rise to phenomena through forces, and these forces are the influences which determine all.

In entering the world governed and controlled by forces, science must concern itself with the operations of these forces, for it is through correct interpretation of such alone that we are able to prove cause to effect and conversely effect to cause.

Evolution in understanding has been slow to progress for the materialistic

conception of the ultimate of matter has long held the stage and as a barrier has denied even the presumption to other reasoning.

With the advent of the dissociation theory and its comprehensive underlying fundamental as explained by electronic phenomena and a clear insight into the physics of radium, we are entering a field in which we are beginning to appreciate that we are no longer concerned with matter as substance, but that far beyond this lies the reality which as manifestation to us is a phenomenon of *energy*.

In the element radium we find the master key that will unlock the storehouse to greater and wider knowledge and much that has been misunderstood or not understood at all will find herein the beacon light to the greater sphere of our universe.

At the January meeting of this Branch details of the history of discovery and of the peculiar properties of radium were thoroughly presented, yet in order not to lose sight of the wonders that this element reveals to us it may not be amiss to tabulate the known physical properties.

As men of science looking for truth and as scientists concerned with elucidation and solution of problems that appear complex, we must have the courage to recognize and to accept the truth when we find it, and regardless of any prejudice, regardless of any bias or of any ideas or opinions, we must follow the trail, no matter how, for it will take us from the beaten paths of the present misconceptions.

And so radium has given us a truth, we are familiar with the electronic conception and we can thereby explain its apparently peculiar properties; these in general are as follows:

Ray radiations, consisting of alpha, beta and gamma.

Ray emanations, which in loss are regenerated within the atom; these emanations are subject to reaction, to decompositions, and these decomposition products give rise to other elements or pseudo elements.

Through observation and experiment and by calculation we know that this is a phenomenon that continues for thousands of years and have ascertained that these radiations and emanations are *energy charges*.

To sum up the known properties of the energy radiations as observed in beta rays, we know they are:

Negatively charged electrical particles.

Their velocity is about one hundred thousand miles a second.

Their mass is equal to one-eighteen hundredth of the mass of hydrogen.

They represent mass and inertia.

They discharge electrified bodies.

They are deflected in opposite direction from the positive charge by the magnet.

They give rise to light and heat in bodies which they strike.

They communicate mechanical motion to bodies.

They are absorbed by bodies in direct proportion to the density of those bodies.

In other words the atom of radium is an atom of *energy*, a potential energy that is inherent or intrinsic, and this energy is available as kinetic energy and through transformation is dissipated into heat and light.

Leaving out of consideration for the time being the physical manifestations of the other rays we can thus graphically illustrate the beta rays as follows:

Radium	Beta Rays as Energy	Potential	Kinetic	Heat Light
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This being true of the element radium with evidence to support that truth, it becomes a truth transcendent that it is *true for every element*.

Natural law is universal and invariable, gravitation acts upon all things in like manner, there is no exception, and as controlling force is immutable, and likewise the forces which govern and control the element radium are the forces which govern and control every other element.

To this in our daily applications in the field of what we as yet choose to designate chemistry we have ample opportunity of demonstrating the truth of this proposition, we can consider any reaction occurring and in the light of the electronic conception we can no longer maintain that elements per se as substance react with one another, but must correctly interpret these phenomena as the interchange of energies of the elements, or in other words the action and reaction of their electrical charges.

Without the necessary influences which free these energies we can have no phenomena of reactions and it therefore follows that through correct interpretation the whole structure upon which chemistry is reared becomes one of exchange of physical forces and must be viewed as the "science of pure physics."

Chemistry must give way, for in the light of a better and more comprehensive understanding there is *no* chemistry. This as a science has been built up from the past imagination of the atom as ultimate of matter without a clear conception that beyond this phase lies the true solution of the reality in the electron, which electron we now conceive as electrical charge.

Each and every statement will no doubt find its need for defense, and to those who have followed the past ideas in relation to elements it will become most difficult to overthrow old conceptions and accept the new. It is not my purpose to argue with needed proofs in relation to what has been given. This is but preliminary to that which I have chosen as the subject for tonight and even that is but a detail to the greater application of the theory of energy.

The subject "*Phenomena of Drug Action*" therefore becomes a detail of the greater subject "*The Science of Phenomena*," and as this is related to pharmacology, I'll endeavor to confine myself to that part.

In order more fully to appreciate the shortcomings of each and every previously advanced theory of drug action it may not be amiss to give a little consideration to the ideas prevalent today in that respect.

There are numerous theories held as well as defended as to how drugs act. Let me make the bold statement that each and every one is based upon misconception and therefore misunderstanding and consequently all are erroneous; we have no one theory that explains the action of all drugs, and as to the question *why* drugs act there now is no light upon this subject.

In the presentation tonight of the subject, "*The Phenomena of Drug Action*,"

as embodied in the "*Theory of Energy*," with full and comprehensive conception of the fundamentals, there will be given, I believe for the first time an adequate idea of the reason for such action, not alone answering the question how, but also encompassing the reason *why*, and in following the elaboration or unfolding of this theory it will at the same time give a clear understanding in relation to these actions by showing they could not act otherwise.

That there is dissatisfaction with present ideas and theories of drug action is apparent; when giving instruction or in trying to predicate the action, failure results in obtaining such information, and however much we may desire to hold to ideas that drugs act, we cannot overlook the fact that there is something lacking to support our ideas; there is something lacking; drugs do not act, they never did act, they never can act.

That the many theories advanced, supported and even defended may argue for correctness for any given class of drugs is the very proof which defeats such theory in not being able to encompass all drugs, and it is admitted that there is no positive law or rule upon which to date we can account for the varied phenomena as manifested by the administration of drugs.

If a theory cannot account for every fact relating to that theory, it then, by reason of that failure becomes untenable for any fact.

To analyze the shortcomings of every previously advanced theory would take too much time. Sufficient to note and emphasize is the point that if we had an adequate theory that alone would be sufficient and we would not have the many that are extant today.

Yet, without bearing in mind the salient points of the more prevalent ideas, it may be difficult to comprehend their applications and shortcomings: one theory assumes action upon physical properties of solubility, rate of diffusion and absorption. These may influence phenomena of action, yet the theory falls in failing to co-relate allied drugs, as example, acetanilide and antipyrine, and further does not give information of how action is brought about.

Another theory assumes properties based upon chemical constitution, another upon molecular arrangement, another combines the two, then we have the biochemical theory and a few more of less import. They each relate a few drugs to answer their particular application and were the time longer it can readily be proven that each and every one in light of facts is untenable, and the conclusion is inevitable that science has not given us a clear understanding of what is meant by drug action.

In the scope of inclusion for the theory to be advanced there are no exceptions and all drugs, whether of animal, vegetable or mineral origin, find the true reason for phenomena produced. *They do not act.*

There is so much confusion and so much that is fundamentally erroneous in conception, in term, in phraseology, in explanation and in definition in medicine, pharmacology, biology, bacteriology, chemistry and physiology, and in short in every subject related to medicine that any attempt to reconcile the conflicting ideas is impossible, so in order more fully to comprehend the application of *the theory of energy*, in relation to phenomena, we must divest our minds of all the misunderstanding and clear it from the cobwebs of present conception so that

we can grasp the import of the reality and apply the correct interpretations to the facts.

To give you a little idea of the shortcomings of the branch of science as medicine, let me cite a few fundamentals whose answers medicine has not yet supplied and in which that science is woefully cast adrift.

The purpose in submitting these questions in this relation is not for criticism but for the reason of obtaining a better understanding for which the *theory of energy* will supply the answers and supply them correctly.

Why is the blood a circulating fluid?

Why does it contain two kinds of cells?

Why would not either the white or red alone do?

Why are these cells circulating and not anchored?

Why are they circulating in a media called plasma?

When pus is the result of any suppuration, why is it that the white cells alone constitute that pus?

What is the cause and the reason of an elevation of temperature due to infection or suppuration?

Why is the stomach secretion acid?

Why is it hydrochloric acid? Why not nitric or phosphoric, or citric or mayhap a specific acid of individual human characteristic?

Why is sodium chloride a constituent of the secretion of the stomach?

Why is not the stomach alkaline and the intestine acid?

Why is the normal temperature within the range of 98.4 and 98.6 degrees F. and not 90 or 100 degrees F.?

If tubercle bacilli are the cause of tuberculosis, why is not every one susceptible? Why is one being immune and another not? This has never been answered, even with the theory of immunity.

Why has not the cause of nephritis long since been answered, surely there is data enough?

Why has not science given the why of serum reactions?

Why has not science as yet found the origin of cancer?

Why is the air we breathe three-fourths nitrogen and only one-fourth oxygen? To say that the nitrogen acts as diluent to the energetic oxygen is not the reason; it is only a guess and a very crude one at that.

Nitrogen performs a most important function, it has its purpose and there is a most substantial reason for its wide prevalence.

So in light of this we must acknowledge that science hasn't given us a great amount of knowledge that is fundamental. It has been said that if we could answer these questions we could explain life itself. However this may be, I will say that we can answer them, we can answer them correctly and the facts to verify are so strikingly and palpably evident that it is nigh unbelievable that we have missed them for so long.

This subject is so vast that you will appreciate the utter inability of entering into the details of even a few of the salient points given and the presentation of the detail "*Phenomena of Drug Action*" as a part of the "*Science of Phenomena*" becomes a large subject in itself and even in this I must confine myself to a very limited field for want of time.

We first must disabuse our minds that drugs act. This is fundamentally an error and to further maintain that idea is to maintain a contradiction.

It is when we subject substances to given influences that we observe phenomena of action.

If drugs acted we could anticipate the same result within a corpse as we could within the living body. If again the substance of a drug produced an action we must not forget that we would lose that substance, but we know better than that, for we can recover the substance in its entirety, weight for weight, even though it suffers many transformations in its passage through the body.

I am familiar with all the objections that science and medicine as science will advance to account for the difference, but it still remains an unanswered fact that if drugs did act we should obtain like results both in the live body and the corpse; yet strychnine has no more effect upon or within the corpse than has milk sugar or sodium bicarbonate, and when we analyze this fact instead of evading the question we will find the reason *why*, and this will be an answer to a very important fact.

Take a normal healthy living being and if conditions could be such that we could administer a dose of strychnine one minute before death we would observe certain specific phenomena. Now as the result of accident this normal being is killed and one minute after death this body has not had the time to alter any of its organs, nor of its tissues, the blood is still normal and in every respect this body so far as we are able to determine is exactly like the living body, yet if we administer a hundred times the quantity that we did one minute before death, there is no phenomena observed or produced. We can go still further, we can cause absorption by the body fluids, we can by force diffuse it through the blood stream, but no matter what we do there is no response.

This then becomes a most important link and we must account for something in the living body that the dead body does not possess. There is a difference and in this difference we find the reason, everything material is the same, exactly the same, and the difference is that the corpse has lost its power to transmit *energy*. What kind of energy? It is not its potential energy for that in the short space of time has not been dissipated and is still locked up within the cells, but failing in its power of transforming and transmitting this potential we can only conclude that the loss is *Kinetic*. The flow having been interrupted or prevented and unless the power exists to re-establish that flow the potential alone is useless to maintain life.

This kinetic energy is an electromotive force, it acts and responds to reaction, to government and control through influences and agencies of like electromotive forces and action and reaction resultant are mathematically proportionate to the degree of influence.

No action of any substance per se can influence it, and unless a substance possess an electromotive force inherent or acquired that substance is wholly inert or passive to influence a manifestation as phenomena of action.

I won't go into the explanation of the system nor of the manner in which this electromotive force is conducted or distributed throughout the body, but I will ask you to accept it as fact that this force is stored within the brain cells

and from there through radiation carried to every cell of the body and that as a direct current of energy flow.

Accepting this, how can we now apply this idea in relation to what we understand, although erroneously, "drug action"?

Strychnine is	$C_{21}H_{22}N_2O_2$
Morphine	$C_{17}H_{19}NO_3$
Cocaine	$C_{17}H_{21}NO_4$
Hydrocyanic acid	$C\ H\ N$
Nitroglycerine	$C_3\ H_5\ N_3O_9$

Disregard all ideas of all theories advanced to account for "drug action" and follow the one idea of the energy stored or locked within the molecules of these particular drugs, energy which is potential but which through the influence of the operation of the electromotive force of the body is released and through reaction is transformed into kinetic.

Strychnine then possesses an energy which is capable of producing an alteration of the body current which results in the phenomenon of interruption, increasing in intensity as the amount given increases until a quantity is given whose released energy is greater than the power of the body's energy to overcome, producing the successive phenomena of first activation, or excitation, then spasmodic contraction, then shock and finally death.

Do these actions as phenomena differ in any way from the alternating electric current, first as to power of such current inducing interruption of the body current as manifestation of activation, then through increase spasmodic contraction, then shock and finally if power is still more increased, death?

Does it differ in its phenomena from the phenomena of tetanus?

Does it differ in its phenomena from that produced by radium?

It does not, and in all cases cited, apparently widely divergent, instead of assuming we are dealing with four different conditions we are dealing with one and the same fundamental cause and that is action as manifestation of phenomena and the phenomena are but the results of one and the same energy; potential energy which through influence is converted to kinetic and the kinetic in its powers increased until it overcomes the kinetic energy of the body.

If this is true it may be argued, why not at once determine the potential and through influence of transformation, the kinetic power of energy that any one substance is capable of producing and employ only that one as agent for every condition of abnormality and disease? The question elaborates a far greater reach than at first is apparent; first, complexity of the body in toto containing numerous elements; second, the fact of different influences, and third, the fact that in the atom radium we find different kinds and degrees of energy and each subject to influences of different degrees, yet considered in its broadest aspect, it is not too far a reach to anticipate that when we obtain more knowledge of the subject, that the power locked up in the atoms and the molecules of a substance may accomplish far greater results than even our imagination at present would permit us to deny.

We are entering into a new realm. From ideas of all other theories we can

never hope to fathom the power of energies locked up waiting for science to open. We do know that the atom of radium is controlled by forces; we know that its intrinsic energy in quantity is enormous; we know that this manifests itself in different degrees; we know that it is subject to control by other forces, and as fundamental, the forces that control the atom are the same forces that control the molecule and the forces that control the molecule are the same forces that control the mass, so we must look to the atom for the solution of the many perplexing problems that science today as yet does not appreciate and following the course of the influences which control the atom, we are sure to fathom the reason of the *why*?

To revert to the tabulated list of drugs, we will take morphine. From its chemical constitution we should certainly not be unreasonable to expect this drug to act similarly to strychnine. It contains, like strychnine, C H N O. That the difference in quantities does not give us reason for such wide difference in action must be admitted and that molecular arrangement is wholly an assumption in this instance is also known, but considered in the light of the theory of contained energy we can readily account for its phenomenon as resulting in its power of diminishing the energy of the body and in this manner by suspension causing inaction and if given in too large a quantity causing entire suspension or death.

Cocaine likewise as manifestation possesses its particular degree and kind of energy; our old ideas that it paralyzes nerve endings when locally applied is merely an invention of a phrase to explain what is not understood. Cocaine never paralyzed a nerve. When a nerve is exposed, severed, injured or in any way lacerated, there is a manifestation of pain. When then cocaine is applied the pain ceases, not through any paralysis, but through the result of an energy action which restores equilibrium to that nerve circuit supply.

Administer a lethal dose of hydrocyanic acid and we know that death will follow immediately. Herein we have the most striking illustration of an action so-called which upsets every theory under the old idea of drug action, whether of solubility, rate of absorption, diffusibility, chemical constitution, molecular arrangement or any other advanced idea, the result in death is too swift for any theory to account for the rapidity of its influence, but viewed in the light of what actually takes place that of a transformation of its potential to kinetic energy through influence of reaction to the electromotive force of the body we can account for the power of this nitro compound in like manner as we can account for the released energy of nitroglycerine, and for this we cannot maintain that it is the substance which acts for we know that it is a power of the released energy which possesses a force sufficient to shatter rocks.

It is a matter of no little concern as well to understand why it is that these substances are so energetic. I do not want to digress too much, as this particular phase is another detail of infinite magnitude as another link in the chain of "*The Theory of Energy*" and would take hours to present, but sufficient for the time is the fact that all these substances named contain a common elementary constituent and that is *nitrogen*.

Nitrogen is harmless you will say. We breathe quantities of it every minute. You might also say that albumen contains nitrogen and this is surely innocuous,

in fact so much so that it is the very substance that is the food for embryonic life, and to all this I agree. Nitrogen is the food, per se harmless, also apparently innocuous, but permit me to add that because science has as yet not placed its true function, it is not strange that you should entertain such ideas. The reason that such large quantities exist in the air we breathe, the reason that it is a constituent of albumen and to the other extreme that it is contained in every alkaloid and also the common constituent of each and every seed throughout all plant life are the very reasons that this elementary substance becomes at once the most important substance known in the whole realm of the universe in its specific relation to life.

Nitrogen, not oxygen, is the essential to life. Oxygen is needed, and to a great extent we know the functions it performs, but without nitrogen there would be no life of any kind for it is the fundamental element whose function is to transform the energies which govern and control life. Of this I hope at some future time to tell you something more.

What I want to dwell upon now is the electromotive phase which influences energy action as applied in the idea of "The Phenomena of Drug Action."

Being concerned with drugs as remedial substances or agents we must not overlook the important fact that fundamentally the body is governed and controlled through energies. This through equalized distribution is the reason for health, and when through influences any or all parts do not receive an equal amount needed or required to maintain equilibrium, abnormality and disease are then a consequence.

The human system contains from 65 percent to 70 percent water. This we know is nature's greatest reagent, without which no reaction between the forces of elements would take place; this is the medium which carrying salts in solution effects distribution to each and every cell of the body. Sodium chloride is the predominant salt and from facts proven through physics, we know that sodium chloride is the most perfect electrolyte as neutral salt known in nature; biology and geology both, tell us that life found its origin in the ocean and we know that the water of the ocean contains three and a half times more sodium chloride than all of its other mineral constituents combined, originating under these conditions. We are the product or result of these conditions and considered from these two factors alone, our system then becomes or rather is the ideal system for action and reaction governed by electromotive forces. Added to this the intricate net work of nerves whose function is to convey, conduct and radiate currents, we can readily understand how the body generates, supplies and distributes its electric currents.

In introducing a greater amount of sodium chloride than is needed to maintain an equilibrium, we intensify and excite the influence of the electromotive force of those parts with which it comes in contact. If administered into the stomach it activates that organ to greater activity and passing to the intestines likewise intensifies action and catharsis is the result. Given in solution into the blood stream it intensifies energy flow and the phenomena of its action is wholly through its inherent power as an electrolyte and not because of the substance as sodium or chlorine.

So we must measure the degree of activity of all salines according to their

electrolytic power and in degree as such force is inherent in them as mathematically available energy, we will be able to determine their place in specific order whether they will prove cathartic, purgative, laxative or normalizer.

As substances then we do not, cannot lose them. Transformations to different molecular compounds through reaction may take place, which again, is but the exchange of their physical energies, and it is the energies of the substances that in reality produce, as results, what we incorrectly understand as drug action.

Following out the idea of energy phenomena, facts innumerable support the idea and through such we will be able to relate the various properties of drugs. Taking the following, we can readily understand the phenomena of their behavior, in which an

Astringent is any substance or force of weak electrolytic power.

Calefacient, one of increased electrolytic power.

Rubefacient, one still greater.

Vesicant, still more, and

Escharotic of such power as to wholly overcome the power of the system's force or current.

In comparison with the force of heat or electricity with substance or matter we can establish a true relation and that we are no longer dealing with different agents, but that we are dealing with the energies which in degree produce the like results that we reasonably anticipate they should.

Thus we can invade the field of the "*phenomena of drug action*," and apply our ideas in elaboration in differentiating between stabilizers or normalizers, antiseptics and disinfectants and obtain the clear cut conception in results obtained.

A stabilizer or normalizer, whether as substance or as the force as heat or electricity or as radium itself, is one in which the equilibrium of energy forces are maintained; in other words, in which the reaction of their energies is maintained in a state of equal exchange: an antiseptic, in which the energy of the agent is greater than the energy of the surrounding influence and a disinfectant one, in which the energy is so great in power that it wholly overcomes the energy of invading organisms. We view this phenomenon when substances are employed, erroneously as the activity of substance, when in reality it is energy whose action is identical with heat, light or electricity.

That the energy of the body is the basic and fundamental starting point becomes evident. That the storehouse is the cells of the brain has been amply demonstrated. That government of control is through radiation in distribution by nerves, and through these every cell of the body is governed and controlled, that the food we eat, the water we drink and the air we breathe are the sources of supply. Nitrogen is the one element whose function is to transform the obtained energy into available energy as potential and the function of its regulation and distribution is effected by the nervous system. When interference occurs to the supply to any particular part, it is then that equilibrium is disturbed and abnormality and disease are the consequences and result. Following this it will become of primary importance to determine the normal amount in supply needed for the entire system and also for each particular part and by means of such

determinations the coming physician will be not alone able to obtain a clear and correct insight into cause and effect, but will be able to predicate the consequence and result of such interferences for he will then know what is the meaning of vital force. In order to accomplish all this he will through necessity be first, a trained physicist, then a mathematician and lastly an anatomist.

The use for drugs will be planted upon a firm basis if need be found for their use and what we determine as the possibility in action of drugs today we will be able to know as specific tomorrow.

Drugs per se do not act, it is their inherent energies contained within the atom and these energies through influences of release, react with the energies of the body, and whether substances as agents or force as heat, light or electricity be employed, the results that are manifest are nothing more and nothing less than phenomena of physical transformations of energies.

In conclusion of this, a preliminary of the subject, appreciation is extended for the aid given by H. T. Kelly, M. D., and St. C. R. Gay.

TO PREVENT TYPHOID.

Edwin O. Jordan, professor of hygiene and bacteriology at the University of Chicago, writing in the Journal of the American Medical Association, gives the following rules for the prevention of typhoid fever:

For the individual:

1. Keep away from all known or suspected cases of typhoid.
2. Wash hands thoroughly before meals. Do not use "roller towels."
3. Use drinking water only from sources known to be pure, or if this is not possible, use water that has been purified by municipal filtration or by hypochlorite treatment or by boiling in the household.
4. Avoid bathing in polluted water.
5. Use pasteurized or boiled, instead of raw, milk.
6. Select and clean with the greatest care vegetables and berries that are to be eaten raw.
7. Avoid eating "fat" raw oysters and, in general, oysters and other shellfish whose origin is not known.
8. Be vaccinated against typhoid in all cases in which any special exposure is known or feared.

For the community:

1. Insist on the hearty co-operation of all persons with an efficient health officer.
2. Require notification and a reasonable degree of isolation of every known or suspected typhoid case.
3. Exercise strict control over the disinfection of known typhoid excreta.
4. Insist on pure or purified water supplies.
5. Require pasteurization of milk supplies.
6. Regard all human excreta as possibly dangerous and control their disposition in such a way as to prevent contamination of food or drink.