ganist, a valve, *k*, is opened or closed for admitting or cutting off the water supply. In this engine the crank is dispensed with, and the valve gear so arranged as to prevent stoppage on the dead centers.

Communications.

Danger of Galvanized Cooking Utensils, Water Pipes, Etc.

To the Editor of the Scientific American:

I notice in your issue of March 31 an item from the *Deutsche Industrie Zeitung* on the deleterious effects of zinc oxide in toys, etc., and from the remarks preceding judge that you agree with what follows. I have always in the practice of my profession (analytical chemistry) strongly deprecated the use of galvanized articles, water pipes, culinaryutensils, tanks, etc.; but am well aware that this is a point on which the doctors disagree. I would like exceedingly to have the matter argued, in your excellent paper, by disinterested parties, for I have somewhat myself to say on the subject.

I know that the water boards of certain cities hold certificates from practical chemists to the effect that galvanized pipe is harmless and the best for general use, and that citizens are advised to employ it. I consider the use of zinc-coated pipes or vessels for culinary purposes both filthy and dangerous to the public health, whether they are used cautiously and intelligently, or rashly, like the farmer who purposed to boil down cider and sour apples in a galvanized tank.

In large houses, where thereare great lengths of galvanized piping, much zinc goes into the systems of the inmates, producing more or less ill health and discomfort; I have heard complaints of milky drinking water on the breakfast table, etc., proving that the servants draw water for use directly from the pipes without allowing any to run to waste.

That zinc-lined pipes contaminate water flowing through them for very long periods is plain from the following: The water for my hothouses flows through 190 feet of inch galvanized pipe from the street main; the water is from Wenham Lake and proverbially pure; the pipe has been in position and daily use for seven years; even now the first water drawn from this pipe in the morning is quite opalescent from hydrated oxide of zinc. I would be loth to drink such water; and believing that what is unfit for animals' use from metallic contamination cannot benefit plants, I have given directions that at least ten gallons shall run to waste before the water is used. Such precautions are rare in dwelling houses, I am sorry to say.

If we can have this matter discussed in your journal, and perhaps settled one way or the other, much good may accrue. I feel convinced that zinc misused is doing great mischief to public health. DAVID M. BALCH.

Salem, Mass., March, 1877.

[We shall be pleased to receive such information as any of our readers may have to offer on this subject. But we are inclined to think that there is not room for lengthened argument as to whether galvanized pipes are or are not a safe and desirable medium for the conveyance of drinking water. They are unquestionably dangerous; and if further evidence than that above offered by our esteemed correspondent is desired, it can readily be had by consulting the back numbers of the SCIENTIFIC AMERICAN. In fact, in our present number, under the head of Answers to Correspondents, in the correction of a reply given to W. D., we republish a few facts bearing upon the matter.—EDS.]

A Woman's Success with Bees.

To the Editor of the Scientific American:

I am a reader of the SCIENTIFIC AMERICAN, from which I obtain much valuable information. I am wintering fifty swarms of bees on their summer stands, some of them being nearly buried in snow. They are doing finely. I have of my own a system of management entirely original. My hives are so constructed and arranged that I have the swarming propensities of bees as completely under my control as does the stock raiser an increase of his cattle, sheep, or swine. I have no increase by bees swarming unless I desire it; I turn the whole force of bees to storing honey in the boxes connected with the hive. Ample room is given in the boxes for storing honey, so that the bees will fill thirty boxes as quickly as they would three in an ordinary hive. The boxes are so easy of access that the bees enter and commence work without the least hesitation. When I want an increase of swarms, I do not divide or make artificial swarms. But after a close study of the habits and instincts of bees, I am able to have them swarm out naturally, at any designated date in the swarming season, which I may arrange in early spring. My bees average me a clear profit of over fifty dollars a year for each hive I keep, by sale of surplus honey in glass boxes. I am satisfied that bee-keeping is profitable, even in our cold New England climate, where the honey season is short.

I have the Italian bees, and find them greatly superior to the common bee in many points. They will collect double the amount of honey in the same locality. Their vigor in withstanding our cold climate is a strong point in their favor. They also resolutely protect themselves from the ravages of the bee moth, while the common bee often falls a prey to its ravages. Then their beautiful color and large size render them objects of admiration. Then they seldom sting, or show any signs of anger. I have furnished several of my friends with full swarms of Italian bees in my hive, and they have in each case been highly pleased with them. My Italians are beauties; nearly the entire body of the bee is a light straw color. If bee keepers would study more closely the habits of bees, the profits would be greatly increased.

West Gorham, Me. L. E. COTTON.

On Color and Disease.

To the Editor of the Scientific American:

There is something in the color of animals, especially of the feet of animals; but I think your correspondent (page 200, current volume) is mistaken in regard to the pigs eating a poisonous plant, which caused their white hoofs to drop off.

During the war I was in the artillery service, and it was a noted fact that a horse's white foot would get sore when others would not. "Scratches," some called it; and at one time every white foot in a battery of 156 horses was sore, and with few exceptions the rest were all well. They did not graze, but only got the regular rations of oats, corn, and hay, sent from the North and West, and could not have eaten any poisonous plants. We attributed the sore feet to standing in wet and mud, making it impossible to keep the hoofs clean during a Virginia winter with the poor facilities at hand. But how it was that the white feet only were affected we never could explain.

Baltimore, Md. FRED. W. WILD.

How Safes are Blown Open.

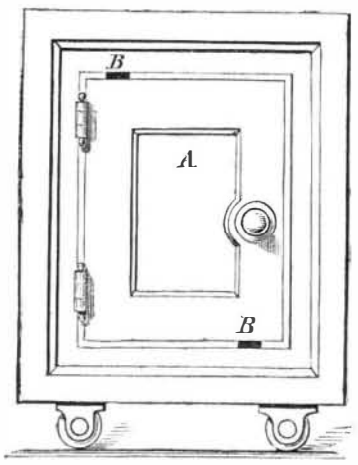
A criminal lately gave to a reporter of the New York *Herald* the following mode of introducing powder within a safe for the purpose of blowing open the doors.

"What tools did you use in drilling the holes?" asked the reporter.

"Good cracksmen don't use tools," answered the burglar. "I'll show you how to blow open any safe in New York without any tools. Just take me to a safe."

There happened to be a safe in Judge Kilbreth's private room, and the writer acquainted the magistrate with the prisoner's proposal. "By all means," said he, "let us learn;" and in a moment the room was filled with spectators.

The prisoner knelt beside the safe, which was locked. "Look," said he, "at this door. Its fits so tightly that no instrument can be introduced in the cracks and powder cannot be inserted. So far so good. The burglar," continued he, "simply sticks putty all along the cracks except in two places, one at the top of the door and one at the bottom, where he leaves about an inch of space uncovered by the putty. At the lower place he puts a quantity of powder and he sucks out the air from the upper place, either by a suction pump, which is the better way, or by his mouth. The vacuum created in the safe draws in the powder through the small crack below. The entire work does not occupy more than five minutes."



The above diagram illustrates the method described. D is the safe door; E E are points left uncovered by the putty. The powder is placed at the lower point, the suction pump at the upper one.

Borax as an Antiseptic.

At a recent meeting of the Pharmaceutical Society, London, Mr. Robottom made some very interesting remarks on the discovery of borax in Southern California, and related a very remarkable and somewhat romantic incident. Traveling on one occasion, weary and unwell, across the bed of what had been at some former period a vast salt lake, and from which some hundreds of tons of native borax are now dug out and obtained, he saw in his pathway the dead body of a horse, and upon it, with but little hesitation, sat himself down to rest. The sun was shining fiercely, and the water he was carrying was hot and unfit to drink. He, however, bathed his temples from the vessel containing it and felt refreshed. Then, with his mind bent on discovery, he commenced a *post mortem* on the body of the horse. To his astonishment, though the temperature around him was almost too high for endurance, he found that no decomposition had taken place, but that, on the contrary, the flesh, as such, was in a perfectly sound and good condition. On inquiry, he was told that the carcase had been lying on the bed of borax, which was immediately underneath it, during the whole of the previous six months. Thereupon Mr. Robottom arrived at the conclusion, and very naturally so, that the borax had been instrumental in preserving the flesh, and in entirely preventing those putrefactive changes which under ordinary circumstances would inevitably have set in. Now if this were really the case, says Mr. W. Willmott, in the *Pharmaceutical Journal*, the discovery would be of much value. "For an account of some excellent experiments, showing the effect of borax on substances readily capable of fermentation and putrefaction, I would refer to a paper by J. B. Schnetzler, inserted in the 'Year Book of Pharmacy' for 1875, page 332. Though, in these experiments, beef, veal, and portions of sheep's brain, were wholly immersed in a concentrated solution of borax, the result was not completely successful. There was no putrefaction, but the meat had an odor *sui generis*. In the case, however, of the dead horse, not only had the borax kept intact the part with which it was immediately in contact, but, inferentially, the whole carcase had been brought successfully under its preservative influence. It is difficult to acquiesce in a conclusion such as this. Borax, in fact, possesses no such power. As an antiseptic it is inferior to boracic acid, whilst boracic acid must yield in turn to carbolic and benzoic acids. And yet meat will putrefy in an atmosphere of the latter though entirely cut off from contact with the outer air. How then, in the present instance, is the preservation of the body of the horse under a burning sun to be accounted for? Presuming the statement of Mr. Robottom's informant to be correct, it would seem to point to the probable truth of the germ theory. It is not impossible that in the wild and untrodden regions of Southern California, beyond and around the Sierra Nevada, the atmosphere, from its extreme and almost optical purity, together with its excessive dryness, causing particles of saline matter from the surface deposits to diffuse themselves through it, might be found incapable of propagating germ life. In an atmosphere such as this, decomposition would be slow, and even the experiments of Dr. Bastian might be reduced to *nil*. But, be this as it may, borax can scarcely exercise its antiseptic power except under the condition of actual contact. If it were otherwise, the grand problem of bringing animal food from the distant shores of Australia would be immediately solved. We might well wish for such a result, and it may be ours in time. In the meanwhile, it is instructive to learn the many and various uses to which borax may be advantageously applied, and at the same time deeply interesting to know that, henceforward, it will come to us in comparative purity, and without stint or limit, direct from the newly discovered saline deposits of the Far West."

Opposition to Machinery.

We are informed, says *Capital and Labor*, that in an eminent coach-building establishment, a short time ago, the principals desired to introduce an American machine for making the wheels. These, of course, have to be prepared and fitted together with the utmost accuracy; and the machine in question secured this so that any number of wheels could be turned out strictly to gauge. Some of the men engaged in this department were ready enough to work the machine, by which their own labor was lightened, and higher wages were secured to them. But as the use of the machine was contrary to the trade union rules, the men were ordered to desist. The machinery was therefore put aside. Since that time wheels made by similar mechanism have been imported from America, this being the only way by which the public requirements for light and strong wheels could be met. It is a curious fact that some of the English carriages exhibited at Philadelphia last year were mounted upon American wheels, which had been sent over from the United States to England, painted, and then returned with the body of the carriages for exhibition. We understand that large numbers of wheels are thus imported, which might have been made in England but for the insensate opposition to the use of machinery.

Cotton and its Spindles.

An eminent cotton firm, in an annual report of the cotton trade during 1875-76, gives the following as the number of spindles in Europe and America, and the average annual consumption of cotton:

	No. of spindles.	Cotton per spindle. lbs.	Annual estimated consumption. lbs.
United States	9,600,000	63	600,000,000
Great Britain	39,000,000	33⅓	1,297,000,000
France	5,000,000	42	—
Germany	4,650,000	55	—
Russia and Poland	2,500,000	60	—
Switzerland	1,850,000	25	—
Spain	1,750,000	46	—
Austria	1,580,000	67	—
Belgium	800,000	50	—
Italy	800,000	56	—
Sweden and Norway	300,000	65	—
Holland	230,000	60	—
Total spindles	68,060,000		2,906,000,000

or upwards of 6,000,000 bales of the average weight of an American bale.

Ring Sickness.

This is not dissimilar from sea sickness; it requires long experience in a ring to overcome the nausea consequent upon going round and round in one direction. One of the most difficult things for a circus rider to overcome is this sickness. Clowns and ringmasters suffer from it greatly, at first, from merely seeing the horses go round and round; but even after years of experience, a ringmaster (whose principal business in the ring is to keep the horses up to a certain gait, and not merely to give cues to the clown), if a horse balks or gets behind time, and he is obliged to keep close upon him, is very likely to suffer from a pronounced fit of sickness at the stomach after he leaves the ring.

The Patent Office.

The new Commissioner of Patents, having been called upon for a report of the condition of his department by the new Secretary of the Interior, makes an elaborate statement in which important information and suggestions in regard to his bureau are given. General Spear informs the Secretary of many things which some of our readers know; but a few extracts from the somewhat lengthy letter will, we think, be read with interest.

"The force," states the Commissioner, referring to his department, "consists of two distinct classes, the examining and the clerical, with the usual auxiliaries of laborers and messengers.

"The examining corps consists of 22 principal examiners, each having a first, second, and third asssistant; of an examiner of interferences, and an examiner of trade marks. Each principal examiner has charge of a class relating to some one or more kindred subjects matter. Each one of these principal examiners, with the aid of his assistants, examines all applications in his class as to patentability, and decides all questions relating thereto, both of law and fact. His favorable decision is practically final, and the patent issued upon his order. In case of his adverse decision, appeal may be taken to the Board of Examiners-in-Chief. This board consists of three equal members appointed by the President and confirmed by the Senate. Their legal duty is to hear appeals from the adverse decisions of the principal examiners and from the examiner of interferences, to review the decisions of those examiners, and they may affirm or reverse them. From their adverse decision appeal may be taken to the Commissioner in person, or to the Assistant Commissioner acting as Commissioner. * * *

"The duties of the examining corps are partly scientific and partly judicial. They require general intelligence, mechanical aptitude, scientific training, familiarity with the state of the art for each particular class, a knowledge of the law and the decisions of the courts relating to patent matters, a judicial turn of mind, willingness to hear arguments and receive information, and firmness to decide adversely to eager applicants. The examiner, in the performance of his duties, is required to make laborious researches in order to ascertain the novelty or the lack of novelty of applications submitted to him. In making the search, he acts the part of prosecuting attorney at the same time. When the search is completed, it is his duty to decide questions, nice and perplexing, as to differences between the processes or machines sought to be patented and those already shown in references in his class. I need hardly add that this duty requires of the examiner an amount of patience, fairness, intelligence, and fidelity not often to be found. And, further, that on the one hand he shall be so sustained that he can act honestly and intelligently, without fear and without favor; and on the other hand, that he shall not be so sustained that he can in security act carelessly or unwisely."

According to the Commissioner's statement, some of the few "fossil" examiners have been removed, and others reduced in rank, which evinces his determination to improve the working force of the Office, which we fully commend. He states as follows:

"A few of the older examiners and assistant examiners were, in my judgment, incompetent for the positions they held, and some have been reduced in grade or discharged since I came into office. In respect to others, I propose to submit recommendations. Many of the older and most of the examining corps appointed since 1869 are able and faithful officers. With respect to them I have but few recommendations to make. In the performance of their difficult executive and judicial duties they need only the incentive that faithful official services will be appreciated. The standard of the examining corps may, and undeniably should be, raised. It is possible on the pay allowed by law (although that pay has not been enough to retain some of the best and most experienced men) as it now stands to elevate the standard of the corps in point of ability, but it is a work which needs to be done gradually. Some of the less able officers have acquired long experience, considerable knowledge of the business, and in some respects render better service than inexperienced though abler men. But they have long since reached their maximum, and their maximum is small. On the other hand, great care is required in the selection of new men."

The clerical force of the Office, which consists largely of ladies who have usually been appointed on personal solicitation, the Commissioner also proposes to sift out, and he will retain only such as are competent to perform the duties required of them. Referring to this force, says the Commissioner:

"Its efficiencies are not up to the standard required by the public interests, nor that which the salaries paid ought to command. The renovation of this force and the elevation of the character of it require time and patience. By carefully sifting out the incompetent and inattentive, I am confident that the Office may be benefited both by the addition of better elements and by better services from those who are retained.

"In respect to reductions, I am of the opinion that the examining corps should be kept up to the maximum allowed by law. The clerical force, I think, may be reduced, when improved in the manner heretofore indicated, and when the method of carrying on the clerical business is changed as I shall hereinafter suggest."

The most important feature, to the greatest number of persons having dealings with the Patent Office, is the examination of applications and promptitude in decisions; and we hope to see the Commissioner more exacting than most of his predecessors have been, requiring the examiner in charge of each class to keep his work up so closely that not more than a fortnight shall intervene in any case, after the application is completed, before a decision is rendered. The long delay in some instances before a decision is made by the examiner is annoying to the solicitor, discouraging to the inventor, and demoralizing to the examining corps itself; and we hope for a reformation in this respect.

"The method of conducting the receipt of applications, examination of cases, and issue of patents," adds the Commissioner, "appears to have been carefully thought out at a very early period in the history of the Office. It works well, is as simple as is consistent with the proper safeguards and checks, and needs no change."

After some suggestions tending to facilitate the furnishing of copies of patents, assignments, and abstracts, and a recommendation of the competitive system of examination of applicants for positions, the Commissioner closes his communication as follows:

"There is no need of going far outside the business of the Office to find matter for examination in order to test the fitness of applicants for appointment. I have found by an experience of nearly three years that an examination in matters pertaining to official business, or pertaining to matters intimately connected therewith, is all that is required, not only to test the knowledge of an applicant, but the quality of his mind and mental habits."

Professor Gray's Telephone in New York.

The first public exhibition of Professor Gray's musical telephone recently took place at Steinway Hall in this city. This instrument is altogether a different invention from Professor Bell's speaking telephone, which we recently described, as it is adapted only for the transmission of musical sounds. At the concert in which the telephone took part, the operator was located in Philadelphia, over 90 miles from New York, and was in telegraphic communication with Professor Gray on the platform of the hall in this city. Professor Gray made a short introductory speech, in which he said: "We don't exhibit the telephone merely as a musical instrument, but as something wonderful in the science of electricity. It cannot produce as fine music as has been heard here to-night from the other performers, but it can be heard further. It should be explained that this is bad weather for the telephone. It has been raining all day, and the wires are wet, and we shall not get as loud sounds as we might under more favorable circumstances." Mr. Gray proceeded to explain that a good deal of the volume of sound produced in Philadelphia would leak out in its passage through the State of New Jersey, and that those who had bought a ticket of Mr. Strakosch, expecting to be entertained with the music of a full brass band, would be equally disappointed with those who had come expecting to be humbugged. The music was quite audible throughout the room, and sounded like a distant organ, with the difference, however, that the low notes were heard much more distinctly than the upper ones.

The sound of the instrument was rather feeble, but occasionally fine and clear tones were produced. The noise made by the instrument was about as loud as that produced by blowing through a comb covered with tissue paper. It was, however, very distinct and clear, and the tunes it performed were distinguishable. The dampness of the atmosphere decidedly interfered with the clearness of the intonation.

A full description of the Gray telephone, with illustrations, was published in the SCIENTIFIC AMERICAN SUPPLEMENT No. 6; and others showing the scene and the instrument in Steinway Hall, during the recent exhibition, will be published in these columns, in our next issue. The construction of the apparatus is briefly as follows: A tongue of metal is arranged to vibrate automatically between two electromagnets, when the electric current passes. Of course the number of vibrations per second of the tongue is dependent upon its length, and consequently two tongues of different lengths will have a different number of vibrations, which, when translated into sound, will produce different notes. If we have sixteen tongues, then it it evident we may produce all the notes of two octaves. With each tongue, connection is established from a different key on a keyboard, so that, by pressing any key, the current passes and the corresponding tongue vibrates, and in so doing breaks and closes the circuit of the main telegraph wire. Therefore the latter is caused to transmit vibrations perfectly synchronous with those of the tongue; and these pass to an electromagnet at the receiving station, which, instead of an armature, has a steel ribbon stretched on a metallic frame. This ribbon is tuned to vibrate as a particular pitch; and hence if the vibrations which pass over the main wire are in accord with it, it will then and then only be thrown into vibration, and will produce sound. As there are as many receiving instruments as sending ones, it follows that the vibrations of any one tongue may be imagined as searching through all the receiving ribbons until one is found which vibrates correspondingly. In this way any note produced at the sending station is reproduced at the place of reception; and whether one or a dozen or more notes are sounded at once, the vibrations will all disentangle themselves, and each set will affect its correspondingly pitched ribbon. This is a very general description of an exceedingly beautiful invention, the practical value of which lies especially in its adaptation to the purposes of multiple telegraphy.

The Orang-Outang.

"The Zöological Society, London, have again been very fortunate in obtaining two orang-outangs. These interesting beasts are now accommodated with apartments in the keeper's room adjoining the monkey house. They are very funny and about as big as a human baby just beginning to walk. They sit in their box surrounded with flannels, and nestle one against each other like the babes in the wood. Their features are exceedingly human: in fact, I have seen many human faces that are much less human in appearance than these infantine catarrhines, or apes of the old continent. They are covered with hair, long and scanty, and of a deep chestnut red. The ears are very small and well shaped. The orbits of the eyes prominent; the eyes very bright and observant; no eyelashes, but the eyelids are surrounded by a few stiff hairs. The forearms are much longer than the legs; all the hairs of the forearm point towards the elbow, where they unite with those of the humerus, and end in a point. The fingers are very long; in fact, the hand is more like a foot. The thumb is placed parallel with the fingers, and is not of the same service to the animal as the human thumb. All the fingers have nails of a blackish color and oval form, but I believe some have no nail on the thumb.

"It is very funny to see the orang try to walk upright. When he is put on the floor he manages to progress by placing his bent fists upon the ground and drawing his body between his arms. When moving in this manner, he strongly resembles a cripple walking on crutches. In a state of nature, he probably seldom moves along the ground; his whole configuration showing his fitness for climbing trees and clinging to their branches. The length and pliability of his fingers and toes enable him to grasp with facility and steadiness; and the force of his muscles empowers him to support his body for a great length of time by one hand or foot. He can thus pass from one fixed object to another, at the distance of his reach from each other, and can obviously pass from one branch of a tree to another, through a much greater interval. In sitting on a flat surface, this animal turns his legs under him. In sitting on the branch of a tree, or on a rope, he rests on his heels, his body leaning forward against his thigh. This animal uses his hands like others of the monkey tribe.

"The orangs, as they sit in their box, look exceedingly grave and sedate. They have somewhat the physiognomy of an eastern prince who has no end of riches and nothing particular to do, yet fond of being amused by other people. I expect their intelligence is very great. It is a very old story that monkeys can talk if they like, but won't because they would be made to work. It would indeed be a wonderful thing if we could get one of these orangs to articulate even a single word; and I should much like the opinion of one of the clever professors who teach the deaf and dumb people to articulate words.

"It is a curious fact that the adult animals are never taken, or I believe even seen, while the young ones are comparatively common. The parents are, I believe, immense fellows, growing between five and six feet. In the 'Asiatic Researches,' Dr. Abel gives an account of a large orang having been killed by the officers of the brig Mary Ann Sophia, who had landed to procure water at a place called Ramboon, near Touraman, on the northwest coast of Sumatra. This apparition, 'when moving, had the appearance of a tall manlike figure, covered with shining brown hair, walking erect, with a waddling gait.' They managed to hunt him to a place where there were few trees, and they were obliged to cut down the trees before they could drive him to fight on the ground. It is stated by those who aided in his death that the human-like expression of his countenance, and the piteous manner of placing his hands over his wounds, distressed their feelings, and almost made them question the nature of the act they were committing. When dead, both natives and Europeans contemplated his figure with amazement. His stature at the very smallest computation was six feet. He was said to be a full head taller than any man on board, measuring seven feet in what might be called his ordinary standing posture, and eight feet when suspended for the purpose of being skinned.

"It seems probable that the animal had traveled from some distance to the place where he was found, as his legs were covered with mud up to the knees, and he was considered as great a prodigy by the natives as by the Europeans. They had never before met with an animal like him, although they lived within two days' journey of one of the vast and almost impenetrable forests of Sumatra. They seemed to think that his appearance accounted for many strange noises resembling screams and shouts and various sounds, which they could neither attribute to the roar of the tiger nor the voice of any other beast with which they were familiar."—*Frank Buckland, in Land and Water.*

Lime in Agriculture.

Pure lime, where it is not mingled with clay, sand, and other organic and inorganic substances, consists of the oxide of the metallic element calcium, and, entering into the composition of all plants, must occupy a large place in Nature's laboratory. It has an affinity for water and carbonic acid; when applied to the land it absorbs water, forming hydrate of lime; this hydrate then absorbs carbonic acid, so that lime, although applied to the land in the caustic state, really exists, shortly after its application, in the form of carbonate, along with a little sulphate and phosphate, as previously mentioned. Lime has for a long time been used as a fertilizer; when land previously unworked is brought into cultivation, or when worn-out pasture land is broken up, lime is generally applied. It affects chiefly the vegetable matter contained in the soil, promoting its decomposition, and thus rendering it available as plant food. We, however, find its action important on some of the mineral constituents—decomposing insoluble silicates, the result being soluble.

The Contagion of Typhoid Fever.

The question of the contagion of typhoid fever has been examined by M. Guerin by the experimental method. He injected into a number of rabbits fecal matter from typhoid subjects, and he finds it has a poisonous principle, at leaving the system, capable of causing death. Various other excrementitious products of persons in typhoid fever, such as urine, blood, mesenteric liquids, etc., have likewise this poisonous property, which is retained for several months. It is absent from the fecal matter of healthy subjects.