WHAT FOOD CAN DO FOR THE VERY SICK.

Consumption Prevented and Cured by Changes in Diet.

WHAT PATIENTS WANT TO KNOW

Practical Information Which Your Doctor Will Never Tell You.

VEGETARIANS GENERALLY UGLY.

To begin in the middle of things, since art is long and time is fleeting and none of us probably have more than eighty or ninety more years to learn in:—

A correspondent has been so indoctrinated with the vegetarian theories that she has felt as if her salvation depended on abstaining from flesh. But recent facts have awakened doubts as to the entire advisability of living on milk and beans, and she wants more facts bearing on the subject.

Dr. Asa F. Pattee, of Boston, told a meeting of the American Medical Association that he had the gout for years and, accepting the popular idea that high living caused it, eschewed beef and ate vegetable food mainly. He saw reason in time to change his mind and ate beef freely, with the result that his swollen, painful joints were decreasing in size and gout disappearing.

Dr. John Cutter, of New York, tells of a woman who had been three summers at one of the large Western sanitariums so widely advertised, but received no benefit. The doctors at the sanitarium told her rheumatic gout was a fiend and incurable; that milk was a perfect food, though in this case it clogged the liver so as to cause serious trouble; that beef was unclean and not fit for food, &c. She went on a diet of meat and a little bread, as vegetables caused bloating, and in three weeks saw decided improvement. A finger that she had not been able to bend to the palm was able to touch it without pain.

Doubtless not a few of the cases of large waists and bloated figures among women, all which are on the way to fevers and rheumatisms, would improve by the strict diet of scraped beef pulp broiled, with toasted brown bread, with little sugar or starchy food.

DIET PREVENTING CONSUMPTION.

It is the experience of physicians that children of tuberculous parents properly fed, with no fermentation of their food, do not die of tuberculosis, but live to grow up in decent health. Dr Cutter says:—"The bacteriologist is terribly at task to find how the bacillus gets into the lungs, and even Koch can throw no light on the question."

The student of the blood has no trouble at all. He holds that the spores are absorbed from the intestines by partially paralyzed organs and transmitted to the lungs, and form, by their chemical and mechanical action, tubercle. When the tissues are undergoing decay and the cough has come on, of course the bacteriologists will find the bacillus in what is thrown off. But if they study what the cases eat they will get more light as to the contagion of tuberculosis.

CONSUMPTION CURED.

In 1881 a young man lay apparently dying of consumption; a skeleton, wasting by night sweats and cough which threw off lung fibres, with frequent hemorrhages; cavities in both lungs, heart enlarged, pulse 120, respiration twenty and more times a minute—a desperate case. He was fed on beef from the top of the round, scraped from fibre, the pulp daintily moulded with knife and fork, not even the hand allowed to touch it lest the human heat should change the condition of the meat; the beef broiled and seasoned to taste with pepper, salt, butter and lemon juice; even a little Worcestershire sauce allowed. The patient was fed this three times a day, given gentle tonics, bathed twice a day with ammonia or acid sponge baths, and carefully watched, for life was likely to slip away at any moment. The cough and sweats left, the patient arose from his illness, went through college, married, and calls himself a well man.

WHAT DIET CAN DO.

Old Dr. Cutter claimed years ago that consumption was curable by proper food and treatment. He published seventy cases in 1880, of which only seventeen failed of cure. Those who could control their appetite and command care got well without going off to distant States among strangers.

Five years ago a middle aged woman came under treatment for fibrous consumption, Bright's disease and fibroid tumor, for consumption and tumors are near of kin. She dieted rigidly for six months, then other foods were brought in and the disease disappeared.

This is not the first case of fibroid tumor cured by food; usually galvanism and food cure together. A little below these accounts I came upon a singularly good definition of these diseases:—"Actions in tissue of productions of the different fermentations in food."

I trust Dr. Cutter will not find fault with this extract of his work, given here with a double intent—to dissuade women from vegetarian error, which has led to fatal endings, and to let some of the worst sufferers on earth know their case is not without help. As Dr. Cutter himself says, "The taking away of hope kills many," and it is absolutely true that of those who die yearly thousands might be saved by knowledge and nursing.

FOOD AND GOOD LOOKS.

Food has almost everything to do with woman's good looks. I never saw a vegetarian yet who was comely in appearance. At best they look like badly cured invalids, gaunt, dull eyed or with gutters below the eyes and faded complexions. Vegetarians allow and largely use the most difficult foods in the world for sedentary people, milk and eggs. The yelks of eggs are said by one physician to be hard to digest and a promoter of rheumatism. I think he can hardly be speaking of fresh laid eggs twelve hours from the nest and lightly cooked. But it is true that stale eggs or those heated by carrying or kept in unwholesome contact develop a poison as deadly as the tyrotoxicon of impure milk, if not identical with it. We must one and all protest against the taxation imported eggs. The Hamburg eggs at nine cents a dozen will answer for painters' work and dressing glove skins, which call for millions of eggs yearly, but failing the foreign supply must cripple home resources and take the invalid's chief nourishment away from his lips.

AVOIDABLE ERRORS.

Errors in food are dangerous in nursing mothers, who not only damage their own beauty for life by poor nourishment but fail to supply children with strength of constitution. Sir Henry Thompson, the eminent writer on food, says:—"Most of the diseases which embitter the middle and latter part of life are due to avoidable errors in diet. These errors begin many times when the child is a few hours old and continue through the earlier years of life, laying the foundation on which to build the future person." "To fully nourish a child," we are told, "the mother or nurse must furnish from twelve hundred to fourteen hundred pounds of good milk during the first year of its life, and this must contain from one hundred and twenty-five to one hundred and forty pounds of solid matter—more than many women weigh," says Dr. Cool, who goes on to state that the nervous system contains as a constituent a phosphorized oil found in the yolk of egg, in the human blood, and in butter and cream especially.

HOW TO USE THE DAIRY.

"Without this phosphorized oil furnished by the blood for the use and growth of the nervous system, it would cease to grow and with it would decline the energy of all the functions of the body." Babies and women alike need this, and it is most attainable in cream which, diluted, is far easier of digestion for the youngest child than cows' milk. Many of the worst dyspeptics find themselves able to digest pure, sweet butter and diluted cream as well as soft boiled fresh eggs, and our nervous, scrawny women want to secure these articles of food in their best quality and freshness.

When shall we have the admirably contrived parcel post service of England and the Continent, which furnishes the London housekeeper with fresh cans of cream and butter churned the same morning in the Cheshire dairies, with boxes of new laid eggs in sawdust and cherries in moss, as well as cut flowers from Scottish gardens for her gaslit dinner table?

EXTEND OUR POSTAL SERVICE.

It saddens an American housekeeper to read of such conveniences in the London *Queen* and the English cookery books. Why on earth isn't it as easy to send a pound of fresh butter from the Genesee Valley to Madison Square by post as to send three pounds of silk from Twenty-third street to the Genesee? Instead of putting a prohibitory tariff on foreign supplies, let our lawmakers allow us cheaper transportation of parcels by post, and the producers of the Far West and South will soon have no cause to complain of competition for their produce. Fresh, well moulded butter from the North Carolina and Tennessee pastures, wrapped in paraffine paper in a pasteboard box will travel in perfect condition without injury to other parcels, and the canned [illegible] point of condensed unsweetened cream, which [illegible] one of the last experiments in cannery, could [illegible] from New Hampshire to the milkless region of Texas unchanged. Your preserved fruits, my dear madam, in Virginia or Mississippi or Los Angeles would go in a chip box direct to your customer in New York as easily as the return check by letter.

POINTER FOR ASPIRING STATESMEN.

Think of the hand work that could travel by mail between the leisurely women of lonesome villages and the overtasked ones in towns. It would be possible to fix standards of work and have patterns so clearly understood that much work could be done in country places which now the country dwellers must crowd the towns to find. If any politician would deserve well at the hands of his grateful countrymen, and specially of the women, who influence the men, let him make the parcel post of England a reality here. If it cannot be done by rail, start the pneumatic system, which has more fortunes in it than any of the electric schemes now afoot.

That's all on politics, my dear lady. Only food has so much more to do with your beauty than cosmetics and transportation has so much to do with food that we can't afford to be indifferent to it. Some French recipes of undoubted value must make up for the digression.

FOR DRYING HAIR.

A preparation for drying greasy hair has been asked repeatedly. The Hospital St. Louis uses salicylic acid 1 part, starch 100 parts, powdered and sifted, sprinkled in the roots of the hair and combed out with a fine comb next morning. For falling hair, after washing the hair clean with soap and water, the following pomade is applied:—Salicylic acid, 2 parts; precipitated sulphur, 12 parts; lanoline and vaseline, each 50 parts. At night friction with the following lotion should be made with a soft brush:—Spirits of rosemary, 100 parts; tincture of cantharides, 10 parts.

MEDICAL RECIPES.

When lanoline and vaseline are both applied as specifics for baldness doesn't it rather reflect on their use as face cosmetics?

A German prescription for preventing cold sores and boils from coming to a head is to paint them five to ten times daily with equal parts of boracic acid and water.

A noted surgeon treats large carbuncles without using the knife in any way by covering the swelling with bicarbonate of soda, moist, with a bandage. In a few days the surface is found in a state of suppuration, when a poultice and soothing ointment effect a cure. It strikes me that as soda heals burns and carbuncles it must be effective in pimples of the face and arms, and a paste of raw egg beaten up with a tablespoonful of baking soda would be a good dressing over night. It should be applied only to the pustules, not spread over the skin.

Dr. William Murrell, of the Westminster Hospital, London, recommends various forms of incense as useful in relieving chronic bronchitis, and as this is pleasant treatment for all his recipe for incense is appended:—Styrax, 5 drachms; benzoin, 3 ounces; Sumbul or jatamansi, 1 drachm; frankincense, 5 drachms. This will be found richer than any of the pastilles usually sold.

AGREEABLE DISINFECTANTS.

According to M. Keldyche, who has experimented in hospital wards, air saturated with eucalyptol is perfectly disinfected and will no longer breed bacilli in gelatine. If this is true, and everything points to its truth, we have a pleasant disinfectant which is an incense of itself and will prevent disease without warning the neighbors off like carbolic acid or iodoform or raising unutterable thoughts of sulphur, not to mention chloride of lime. One recalls with a sigh the air of the California valleys, balmy with eucalyptus, and the long September days, hazy and aromatic as with the fumes of a perpetually burning censer. Eucalyptol has a clean scent, like pine and santal and thyme together.

A writer in the *Popular Science News* reports that he has watched the action of perfumes on the system for years, and believes that not only is inhaling the perfumes of flowers and plants a valuable therapeutic agent, according to Professor Schonlein's opinion, but that living in perfumed air will prevent lung disease and arrest consumption. In his connection with the perfumery business for thirty years he has employed several persons of both sexes condemned to die young of the inherited disease, but who lived to a good age in the saturated air of perfumes.

FLOWER CURE AND WORK CURE.

The same belief is found at Grasse, in the South of France, the flower mart of the world, where the air is full of escaping vapor from the distilling of perfumes and ethereal oils, which is the chief manufacture of the region, and the air out of doors and in is saturated with the exhalations of flowers the year round. Imagine the flower cure, the next æsthetic craze after the faith cure and Christian science. I beg pardon of the flowers—there is truth in their cure, the others are delusions. Apropos, the Queen of Sweden has been renewing her health by the working cure, making her bed in the morning and sweeping her room and spending most of the day at work in the garden, by order of her physician. When women take to real work in gardens half their maladies and more than half their ugliness will disappear.

NATURE'S NERVINE.

Dandelion is the coming nervine for women. More than one experienced physician tells of its use in cases of nervous depression and melancholy almost suicidal. Hysteria with indigestion are most successfully treated by dandelion alone, using a strong decoction of the roots. For school girls growing green and black with overstudy or bad circulation from any cause, for excitable women and those hysteric subjects who make their friends' lives a burden if not their own, the simplest remedy is a cup of strong dandelion coffee three times a day. But it must be strong and from the roots, fresh as possible, not the dried stuff sold as dandelion, which is half bread crumbs and the other half any age with the life roasted out. No officinal preparation compares with the decoction of herbs and roots fresh from the garden or well kept at first hand.

IN THE BOUDOIR.

Those who write decrying cold cream, of which there are complaints of late, will hardly find accord with me. The dainty old toilet necessary has healed too many windburnt lips and chapped hands for generations of beauties to have a disrespectful word said of it. But there must be care used in cold cream as well as everything else for the toilet. It must be fresh, and only kept in small quantities, not to exceed a month's use.

Almond oil, delicate as it is, pharmacy cautions us is the readiest of all oils to grow rancid, especially in ordinary temperatures. Much almond oil sold is kept too long in the shops, even if pure, and ever so slightly rancid will work harm and irritation to a delicate skin or to scratched and windburnt surfaces. To be sure of the oil one wants to get it at one of the French places where they have a press and grind the oil from the nuts before your eyes. Then, too, I am sorry to find that rosewater, that comparison of blandness, in said fact sours by keeping or grows musty, as you can verify by much that passes for rosewater in shops. It is the nature of the sweet thing it is too delicate to keep long without care, or being made ever so much stronger than any but those ladies who make for their own use take the pains for.

Given choice materials, however, an ounce or two to last three or four weeks is all that should be kept on hand. It is nonsense to expect the large jars of half a pound or more to keep nice in ladies' warm chambers and dressing rooms. Cold cream used to keep better in the icy Puritan bedrooms, where girls froze their toes saying their prayers and fires were only known in sickness. A glass jar of cold cream, frequently opened in a warm room or closet, may be expected to keep sweet just as long as a jar of unsalted butter, and you know how soon that would go off.

Thin glass is too good a conductor of heat to be advisable for keeping toilet creams, which preserve their quality best in thick queensware or pottery like the quaint blue and yellow figured ware of the old Italian apothecaries, which is the delight of collectors. What those apothecaries did not know about their craft, especially in cosmetics, is hardly worth telling, and they showed this in the thickness of their cerate and ointment pots.

Wood is also good to keep ointments in, with little change in temperature, were it not for the grease in most of them. An ointment, pomade or cream that cleaves clean from the side of the jar or box is a very nice thing of its kind. But there is another reason why cold cream isn't what it used to be, malgre the cold bedrooms and the prayers. It is a pity that cream which is so fine grained—they beat it with an eggwhip, my dear, not the old fashioned stirring with a silver spoon—and so deliciously fragrant is gulitless of a particle of rose water, its place being taken by a few drops of rose oil and glycerine.

FACTS ABOUT GLYCERINE.

Now glycerine is variable in character, and more often than not very impure and tinctured with irritating substances, which neither smell nor affect the skin pleasantly. The smell of most glycerine is enough to deter one from giving it a place on the toilet table. Vegetable glycerines are the safest to use, for much animal fat used in soapmaking is of too doubtful quality and the separation of the glycerine too carelessly done to recommend it.

After reading the processes for separating glycerine from soapfat and lanolin from the scurvy refuse of wool factories, I do not care to use either on my skin while there are unctions of cleaner origin. Vegetable glycerine from nut oils that are not rancid have a wholesome start, and with due purifying and redistilling commend themselves. But you can see why cold cream smelling like the vale of roses itself, its rich scent hiding almond oil a little turned and glycerine no better than it should be, improved by keeping six weeks on your toilet near the register may be capable of effects like impure soap and only soothe as it is first put on.

TO BUY AND KEEP OINTMENTS.

Buy cold cream of a careful druggist who knows the minutiæ of his art or of a reputable woman dealer in cosmetics. Notice that such women know enough to sell cold cream in dainty little pots, holding a great spoonful perhaps, which is enough for the lips and inside the nostrils or edge of the finger nails as long as it can possibly be kept. And that is all in the best practice that cold cream is used for. A more neutral preparation is desirable for massage.

There are Chinese skins which can use cold cream a lifetime without raising a hair, but most are different, and if you use these mellow, oily, greasy applications well rubbed in by a masseur three or four times a week I am much afraid after a while you won't like the effect. Of course it smells deliciously and feels grateful, and if you put it on your hands with kid gloves over or on your face, and let it alone, the old way, it won't come to much harm. But use either lanoline or cold cream faithfully with massage for a season and you will wish you hadn't. It is far better to use the oil and the massage on the body and let the face benefit by reflex action. But that is a subject for further consideration. SHIRLEY DARE.

HOMEMADE TOYS FOR YOUNG EDISONS.

Points for Bright Boys Who Would Like to Learn the Curiosities of Electricity.

OLD JARS FOR BATTERIES.

Blocks of Wood and Bits of Steel and Carbon for the Magnet—How It Can All Be Done.

Doubtless many of the boy readers of the HERALD do considerable experimenting with electricity, and probably there are many more who would if they possessed the proper outfit. With a small battery and an electric magnet many interesting experiments may be made, which will show to some extent what a mysterious power electricity is.

A good battery for the purpose is a bichromate plunging battery, which consists of a plate of zinc between two plates of carbon, the whole being suspended in a solution of bichromate of potash, sulphuric acid and water. The larger the plate the more powerful the current, although for experimental purposes several small batteries, joined together in series, are better than one large one. One small cell of the style to be described will furnish a pretty good current and is sufficient for many purposes. It can be easily made as follows:—From the electricians get two pieces of carbon and one piece of zinc, say 1½ inches wide and 4 inches long.

The size can of course be varied to suit the jar or for any other reason. Both the zinc and carbons should be ¼ inch thick, whatever their size. Amalgamate the zinc by first cleaning its surface by dipping it in a dish of water in which a little sulphuric acid has been turned, and rubbing it

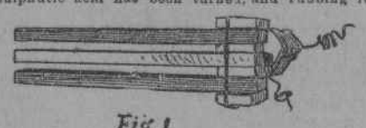

Fig 1

with a piece of cloth. Then rub a little quicksilver all over it until the whole surface is bright. Some electricians furnish zinc that does not need amalgamating, so it is best to ask whether the piece purchased needs it or not. Amalgamating protects the zinc from the too rapid action of the battery fluid.

TO MAKE THE BATTERY.

Now cut four pieces of ¼ inch wood, two ¾ inch wide and as long as the zinc is wide, and two ¾ inch wide and 1 inch longer than the zinc is wide. Have at hand a stout string or some wire and three strips of thin sheet copper about 1 inch long and ¼ inch wide.

Now place the zinc between the carbons with the short pieces of wood separating them, and the long pieces outside the carbons, and wind the string of wire around them lengthwise to keep all in place. Wind hard and tie fast, and all will be held securely, the zinc hanging down between the carbons with ½ inch space between them. The outside pieces of wood project ½ an inch from each side, so that the string does not touch either zinc or carbon. These pieces of wood serve also to suspend the whole in the jar. The strips of copper go between the plates and wood, the two outside ones being bent over at right angles and fastened together with wire for the connection with one pole of the battery, and the middle piece being bent away so as not to touch them, for the connection with the other pole. Figure 1 shows the arrangement ready to place in the jar.

Use any jar at hand, an old bottle with the neck broken off, an old tumbler or anything handy of glass or crockeryware. For the solution dissolve two ounces of bichromate of potash crystals in one pint of hot water, and when cold add an ounce and a quarter of sulphuric acid. Fill the jar so the liquid will reach two-thirds of the way up on the carbons, connect the two pieces of wire with the copper strips, and everything is ready. When not in use lift the arrangement out of the fluid and occasionally amalgamate the zinc.

TO MAKE A MAGNET.

To make an electric magnet take a piece of thick writing paper 1½ inches wide and 3 inches long and cover all but about an inch of one side with mucilage spread on thin. Then roll it up on a lead pencil to make a tube 1½ inches long. Dry thoroughly and in the meantime prepare the ends

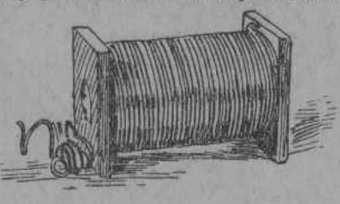

Fig 2

These are generally round, but square ends will do as well and better for the purpose the magnet is intended. Cut two pieces of hard wood 1 inch square and ½ inch thick. In the centre of each bore a hole just large enough for the paper tube to fit into tightly.

In one piece bore two small holes with a brad awl, one as near the large hole as possible and the other near the outer edge. Glue the tube in place, and when dry a good strong bobbin, made with the use of but few tools, will be the result. Now fill the bobbin with No. 20 cotton covered copper wire, put the end through the small hole nearest the centre, and starting from that end wind across and back until the spool is full, and then put the end through the other small hole. Wind the two ends into small coils, but be careful not to twist them off. To make the coil look nice paint with a varnish made by mixing a little vermillion with shellac, or by dissolving some red sealing wax in alcohol. When finished the magnet will be like figure 2, if made according to directions.

With battery and coil completed many interesting experiments may be tried. To magnetize a jackknife blade thrust the blade into the centre of the coil for an instant, and then try it in a paper of tacks or a bunch of needles. It will be found to have acquired a fondness for all articles of steel or iron, and will hug them close unless they are too large. This is a much easier and quicker way of doing it than the old fashioned way of rubbing the blade over a horseshoe magnet.

THE GALVANOMETER.

A galvanometer may be arranged by picking up a fine needle by the point with the magnetized knife blade. Bring the lower end of the needle near the coil and it will be drawn into one end and repelled from the other. If suspended from the point so as to move easily the needle will follow the direction of the current and will indicate in which way the magnetic circles are moving. This is a very nice experiment.

A piece of ¼ inch round iron with the ends filed off flat should be used for a magnet core. This will just fit into the hole in the centre of the coil. Soft iron will not retain its magnetism as long as steel, so it is most appropriate for cores for the magnet, as it will hold only when the current is on. With several cells joined in series and connected with the coil a large weight may be suspended from it. To join in series is to join the zinc of one cell to the carbon of the next, and so on through the whole. The wires from the coil run one to the zinc of one end cell and the other to the carbon of the other end. This gives an intense current, and if five or six cells are used the coil will become very hot.

The magnetic circles can be formed with iron filings on a piece of glass. Take some of the filings and spread them out on a piece of dry, clean glass. Hold the magnet under them, the ends toward the glass, and tap the glass slightly. The particles will form themselves into a circle, the magnet attracting them through the glass.

The battery above described will operate a small induction coil, and several in series will run a small motor. Four or five cells will light a five candle power and burn it two or three hours, although it would lose some of its brightness after the first rush of current. When the liquid is exhausted throw it away and put in fresh. Don't add new crystals or acid to the old. Bichromate of potash and sulphuric acid are both poisons, but may be used without danger if care is taken. Keep fingers away from both, although the bichromate will not poison with ordinary handling unless the skin is broken. But it is safe to handle the two ingredients mentioned, as well as the fluid when prepared, with care.

"BANK," THE NEW GAME OF CHANCE.

IT IS PLAYED WITH A BOX AND TWO DICE AND HIGH THROWS COUNT.

Among men who like to hazard their money in the hope of gain the game of "Bank" is becoming popular. It is played with a box and two dice. Any number of persons can play. The person making the highest throw starts the game and becomes the banker.

In opening he casts the dice on the table, but holds the box over them. Then the players wager that they can beat the throw the banker has made. After each person has staked his money the banker removes the box and discloses what he has thrown.

Each player then throws in turn, winners receiving even money for their effort. If the banker is beaten by every person in one inning the next man to the left becomes the banker, and so on in turn.

In the event of double sixes being thrown by any or all players two for one is paid by the banker; but if the latter throws two aces he pays even money to each player and ceases to run the bank until his turn comes around.

There is no limit to the amount of money a player can risk, but it is usually fixed at ten cents. But a surprising amount of cash can be lost and won in a short time, even on that small basis.

As the game can be protracted for an indefinite period it is usually terminated by mutual consent to the establishment of a time limit.

WHAT THE DOCTORS SAY.

VALUE OF SULPHUROUS ACID GAS AS A DISINFECTANT.

[From the European Edition of the Herald.]

Sulphurous acid gas, produced by the combustion of sulphur, is very frequently used in France as a disinfectant, whereas in Germany it has been almost completely left aside since the experiments published in 1883 by Wolffhügel and Koch. These writers, as well as Schotte and Gaertner, having failed to sterilize the spores of anthrax in a dry state by its use, concluded that this gas is of no service in disinfecting, and that from that time forth it had better be given up on account of the impossibility of knowing whether suspected matter contained spores or not.

It is known that the spores or germ corpuscles, the elements of bacillary reproduction, are enclosed in a covering that is extremely resistant, and which while rendering them less accessible to the ordinary causes of destruction, enables them to await conditions of surroundings and temperature suitable for their fructification. Is it thus astonishing that the spores of anthrax are not destroyed by sulphurous vapors, since they withstand the action of boiling water unless it be continued for two hours, and since in a dried condition they can support with impunity a heat of 130 degrees centigrade, a temperature which no adult form could possibly survive?

But even if we admit that microbes are capable of retaining their virulence after having been exposed to the vapors of sulphurous acid gas, must we on that account admit that this gas has no disinfecting properties at all? By no means. We have only to remember that in the present state of our knowledge the question of chemical disinfectants is a mere matter of species, and that one of these substances, for instance, may be found powerless to destroy certain microbes and yet have a more powerful action on others.

THE IMPORTANT POINT.

The important point, therefore, is not so much to know whether sulphurous acid gas has or has not disinfecting properties, as to settle the question whether there are certain microbes or germs of disease that it destroys, and in that case which they are. The solution of this interesting problem has been undertaken by a French microbiologist, M. Thoinot exposed to the action of sulphurous acid gas the germs of a number of microbian diseases—anthrax, tuberculosis, glanders, typhoid fever, diphtheria, cholera, &c. In order to place himself under ordinary conditions he exposed these different virus freely to the action of sulphurous acid gas in a room containing fifty cubic metres, of which all the cracks, openings and doors had been hermetically sealed.

In each case in which the microbian species under examination allowed him to do so he tested the disinfecting action by subsequent inoculation on animals. This test inoculation was always accompanied by another inoculation of the same virus of the same age and origin, and that had not been exposed to sulphurous acid gas, on animals of the same species. As regards microbian species that could not be inoculated on animals (typhoid fever), they were only sown on suitable substances after having been exposed to the action of the gas together with other crops of the same age and origin.

These experiments, which will be found related in detail in the *Annales de l'Institut Pasteur* (August, 1890), prove that the microbes above mentioned divide themselves into two distinct groups as regards the effect on them of sulphurous acid gas; the first of these groups, to which belong Pasteur's vibrion and symptomatic and bacteridian anthrax, resist absolutely the action of sulphurous acid gas, even when it is present in large quantities; the microbes of the second groups, which contain tuberculosis, glanders, typhoid fever, Asiatic cholera and diphtheria, are as a usual thing destroyed by the action of sulphurous acid gas. The dose required is variable, but sixty grammes of sulphur per cubic metre for twenty-four hours in a well closed room give absolute security.

The above facts suffice not only to rehabilitate sulphurous acid gas, but to prove that disinfection by its means, so far from being a useless process, should be strongly encouraged on account of the low price of the article and its easy mode of application.

DANGEROUS GERMS IN THE SOIL.

Among the most dangerous complications of wounds are gangrenous septicæmia and tetanus, which are produced by certain microbes that abound in the superficial layers of the soil. The microbe of tetanus, which has also been discovered in hay dust, can also be perceived in the excreta of animals that are being fed with fodder that has been in contact with earth coming from gardens, roads, or manured fields; these animals, nevertheless, remain refractory to the disease.

This result, which has also been noticed in rats, mice, guinea pigs and rabbits that were made to take food soaked in pure preparations of the bacillus of tetanus, and whose excreta were virulent without their having taken the disease, led MM. Sanchez-Toledo and Veillon to undertake a series of researches to ascertain whether the excreta of healthy animals contain dangerous germs.

In these experiments they used rabbits, the greater number of which, after having received an injection beneath the skin made of the excreta of horses or cattle, succumbed in five or six days with all the symptoms of tetanus; some of them were carried off even more rapidly by gangrenous septicæmia. The latter disease would have been more frequently observed if guinea pigs or mice had been used for the experiments instead of rabbits, as they are much more susceptible to the action of the septic vibrion. However this may be, the bacillus of tetanus was discovered by microscopic examination of the pus and serum of the experimental wound, and the proof of this is that when cultivated and inoculated in white rats or guinea pigs it produced typical cases of tetanus.

In eight cases of inoculation made in rabbits with the excreta of six horses, tetanus was produced four times, according to MM. Sanchez-Toledo and Veillon, in the paper they read before the Société de Biologie de Paris. The disease also appeared in two rabbits that had been subjected in the same conditions to injections of cattle excreta.

These facts prove that horses and cattle swallow with their food, which has been brought in contact more or less with the earth, the spores of the tetanus bacillus, which, as well as those of the septic vibrion, withstand the action of the digestive liquids and are to be found in the excreta with all their virulence. So far from weakening the theory of the equine origin of tetanus that has been proposed and defended by M. Verneuil these researches corroborate it by giving the explanation of the large number of cases observed in persons handling horses.

DRAWBACKS OF COMPRESSED DRUGS.

Drugs in a compressed form, a fashion that has come to us from Germany, are now being largely used. The facility with which they can be given created a certain vogue for them, which would go on increasing if the public were not made acquainted with the drawbacks they may present.

M. Boas concludes from observations made on patients in private practice and on himself, that drugs given in compressed tablets have frequently no action at all. For instance, tablets of quinine or of rolix mas, given by the mouth, can be found intact in the excreta. After giving tablets of salphonal M. Boas found this drug dissolved in the fæces, but it had not been absorbed. On account of the pressure to which they are subjected while the tablets are being manufactured, these drugs lose their power of dissolving in the digestive fluids.

AMUSING SCIENTIFIC EXPERIMENTS.

INSTRUCTIONS FOR THE CONSTRUCTION OF THE AUTOMATIC FOUNTAIN.

Take an ounce vial and fill it about three-quarters full of water, make a hole in the cork and insert a small tube or a stout piece of straw. The opening must be as small as possible; the tube must reach nearly to the bottom of the vial and the cork must be pushed in tight; now, if you blow into the tube the air will be compressed in the upper part of the bottle, and when your lips are taken away a little fountain will play from the tube for a few moments. I will now show you how the fountain can be produced in a partial vacuum without compressing the air.

AUTOMATIC FOUNTAIN.

Now take a glass jar with the mouth large enough to go over the small vial and heat the inside over the flame of a lamp or candle; place the small vial on a plate upon several layers of blotting paper which have been soaked in water for a moment, then take the heated jar and invert it over the vial, pressing it down as tightly as you can upon the blotting paper, and watch the result. When you heated the inside of the jar the air inside was expanded and partly driven out. The blotting paper makes a hermetical joint and the air contained in the upper part of the vial forces the water up through the tube to the bottom of the jar and it falls in a little cascade down the sides.

STATE SOLDIERS, ATTENTION!

Inspector General Barber Hauls His Boys Over the Coals.

SOME STIRRING SUGGESTIONS

Useless Departments Should Be Abolished and Rank and File Get More Work.

The annual report for the year ending with 1890 of the Inspector General's Department of the National Guard of the State has just been issued by Brigadier General Thomas H. Barber, the head of that department.

General Barber's report and its recommendations is bound to cause considerable stir among the 13,000 and odd members of the National Guard. He finds much fault and advocates radical changes in the Guard; but his blame, it must be said, is just, and throughout its pages he has praised wherever he could judiciously.

General Barber was taken from the position of Colonel of the Twelfth regiment and made Inspector General of the State September 12, 1889, and therefore at the issuing of his previous annual report he could have gained but little knowledge of the workings of that department and the entire National Guard.

It is evident that he has carefully studied during the past year the National Guard from both a practical and scientific military standpoint, and the changes he recommends are the fruit of his studies and his experience both in the Guard and the regular army of the United States. General Barber had sixteen years experience in the army, passing from a cadet at West Point to a first lieutenant's bars on the frontier.

GENERAL BARBER'S POINTS.

Whether all General Barber's recommendations will be heeded by the powers that be is of course purely a matter of conjecture, but as he is in harmony with the Commander in Chief, Governor Hill, and Adjutant General Porter it is safe to say that as far as possible the changes he advises will be made.

General Barber says, "The progress of many commands is not encouraging," and as on the same page are found the following paragraphs he probably means they are part of the reason why:—

"The obligation assumed by enlistment or by commission is not great enough, and its violation is not seriously enough considered or punished.

"I respectfully recommend that, in addition to the present term of five years, shorter terms of enlistment be allowed. Two years for the first term and three years for the second.

"A deposit should be required from the recruit in case of the shorter term to cover the expense to the State of his uniform, said sum to be forfeited in case of failure to re-enlist for the second term of three years, or in case of a failure to perform a certain fixed percentage of duty for the first two years. In case of re-enlistment and the required performance of duty, the money to be refunded at the expiration of five years. Many conscientious men are unwilling to assume the unknown responsibilities of military duty for five years who would enlist for a shorter period, and finding the work attractive and instructive would continue in the service. Hope of promotion is the proper ambition of every soldier; it develops interest, stimulates energy and leads to progress. Every vigorous and intelligent young man who enters the military service looks for advancement, yet many excellent captains and lieutenants leave the State forces after years of faithful work without obtaining their just reward."

As a remedy for lack of promotion this is what General Barber thinks will fit the case:—

ABOUT PROMOTIONS.

"I therefore respectfully recommend that all general and field officers be retired after fifteen years' service, all captains after ten years' service and all lieutenants after seven years' service, the length of service to be counted only in the same grade.

"I also respectfully recommend that such officers be placed on a non-active list so long as they report yearly to the Adjutant General, and that they be not eligible to re-election in any command until they have remained out of the service for two years. This list to be composed only of officers of the line, said officers to be regarded as qualified for staff appointment at once. All staff officers whose functions cease should be mustered out immediately."

In connection with this General Barber recommends that the supernumerary list be abolished and that all officers who are borne on it be mustered out of service, and probably has one or two notorious ex-officers in mind when he says, "Such a list affords the means, in the case of certain ex-staff officers, of avoiding the duties of citizenship without doing military duty; it has no practical utility."

MORE RANK THAN WORK.

After a careful study of ten departments of the State Guard, the heads of these departments and their aids, the ranks carried by these officers and the work they do, General Barber comes to the conclusion that a great many of them have very little to do and too high a rank for their duties, and that other deserving and hard working officers are thus unjustly ranked below them, and so he recommends this:—

"The Code should be so amended as to abolish superfluous departments on the expiration of the term of service of the present incumbent, to reduce the rank of the heads of those departments in which the duties are comparatively light, and the rank of the aids, with the exception of two, should be reduced and their number curtailed."

"A limit should be placed upon the number of assistants in the several departments and their ranks should be prescribed. The highest rank, the just reward of long and faithful military service, should be sparingly conferred, and then only upon officers of experience and merit. Its indiscriminate bestowal is detrimental to the best interests of the State."

The departments General Barber has in mind for abolishment are the commissary and quartermasters', both of which, he says, "have no functions." General Barber thinks the duties of Paymaster General and chiefs of artillery and engineers are only occasional and their rank and that of their aids should be reduced.

And here is another startling recommendation and one that will no doubt meet with much approval among the members of the National Guard:—

"I respectfully recommend that in addition to the election of regimental company officers by the company they should have a two-thirds favorable vote of the Board of Officers of the regiment before being eligible for examination; this would give additional security for the selection of good officers."

The rest of General Barber's recommendations are:—

"I respectfully recommend instruction in bayonet exercise and the fostering of athletic sports.

"I respectfully recommend that some simple distinctive mark by which regiments could be at once known be adopted.

"And I respectfully recommend that the Thirty-second regiment be mustered out of the service. At the last inspection at its armory it was found to be in a bad condition, no improvement during the past year having occurred."

FORCES OF THE STATE.

The total force of the State, according to the report, shows a small loss, so small that it really amounts to nothing whatever. The actual strength of the National Guard at the last inspection was as follows:—

Artillery	398
Infantry	12,800
Cavalry	103
Signal Corps	95
Total, 1890	13,426
Aggregate strength	13,862
Loss	436

Early last season a circular from the Adjutant General was sent to all the organizations in the State giving a standard by which the state troops would be judged at the annual muster and inspection. The result of that circular, General Barber says, "was beneficial. Many companies in which soldierly appearance was formerly the exception have reached, or nearly reached, the degree of neatness and military bearing required."

But the Inspector General complains a little, thus:—

"In some instances there is talking and unsteadiness in rank at attention. This serious breach of military deportment will be closely observed and reported.

REGIMENTS THAT SPIT.

"The soiling of the armory floors by the use of tobacco has been practically stopped. There were a few cases reported this year, noticeably in the Ninth and Sixty-ninth regiments."

A careful search of the report fails to reveal anything about gum chewing. Gentlemen of the Ninth and Sixty-ninth, a word of advice—chew tutti frutti.

In his report General Barber places the regiments and companies as they stood in comparison with the standard. As per example, the Twenty-second regiment.

Seven companies up to the standard.
Two companies nearly up to the standard.
One company below the standard.

Of the regiments in this city the Seventh alone had all its companies up to the standard. In Brooklyn the Twenty-third regiment has the same mark. No other regiments in the State are so credited. Of the batteries in the State the Second, Third, Fifth and Sixth reach the mark, and both the Signal Corps, the First and Second brigades, are up to the standard. A recapitulation of the entire force of the State by companies shows the efficiency of the Guard:—

Up to the standard	87
Nearly up to the standard	41
Below the standard	57
Total	185

General Barber hopes that the next year's report will show all the companies as up to the standard or nearly there.

In his report he says that he finds all the State property, armories, rifle ranges, &c., in good condition, with the exception of the Sixty-fifth Regiment Armory, in Buffalo, and he values these properties at over $6,000,000; says it cost last year $598,173 to run the National Guard, and says in connection with that "This investment and annual outlay is wise if it disseminates military knowledge and keeps alive the military spirit of the State. The National Guard is well worth the money expended, provided it is well disciplined and well instructed in the fundamental details of the soldier's profession. With such generous support the State is entitled to the best of troops."

PRAISE FOR THE CAMP.

For the last encampment of instruction at Peekskill, where General Barber spent the entire time of the camp observing, he has little else but praise. The only two strictures he makes are these:—"Military courtesy is willingly but often crudely extended; roll calls are often carelessly conducted."

He makes several recommendations of changes in minor points, and then gives the following words of praise:—"During the camp of 1890 the excellent behavior of the enlisted men and their almost universal obedience to orders, in spite of great facilities for their infringement, was most remarkable. They showed a degree of self-respect worthy of high praise. Officers and men, as a rule, were subordinate and anxious to do their duty and to learn.

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