THE FAITH CURE DISCUSSED.

Chapter II., Relating to the Healing Miracles of the Gospel.

NUMEROUS OTHER MIRACLES

Cures by Sham Medical Appliances—The Power of Pure Mental Impressions to Heal Disease.

That I may not pain the feelings of any reader—says Francis Power Cobbe in his article in the Contemporary Review on Faith Healing and Fear Killing—I will not attempt to analyze from this point of view the healing miracles of the gospels (notably the cures of epileptics and maniacs), but cite the observations upon them of the Bishop of London, than which in my humble judgment nothing can be more just or philosophical. Here are his remarks in his Bampton Lectures for 1884:

Take, again, our Lord's miracles of Healing. There is no question at all that the power of the mind over the body is exceedingly great, and has never yet been thoroughly examined. Some have assigned to this cause the extraordinary cures that have been undeniably wrought at the shrines, or on sight or touch of relics, of Roman Catholic Saints. . . . It is quite conceivable that many of His miracles of healing may have been the result of this power of mind over body which we are now considering. It is possible that they may be due, not to an interference with the uniformity of Nature, but to a superiority in his mental power to the similar power possessed by other men. Men seem to possess this power both over their own bodies and over the bodies of others, in different degrees. (The Relations of Religion and Science, p. 199, et seq.)

Putting aside, however, the miracles of the gospel as not desirable subjects for our argument, we are elsewhere supplied with abundance of others; as, for example, in the records of the miracles of St. Francis and numberless other saints, of Apollonius of Tyana, of Valentine Greatrakes, of Prince Hohenlohe, and of Father Mathew.

If such "miracles" then, be explicable as results of strong mental excitement—the same in kind though greater in degree than we have all experienced,—we are forbidden by the law of parsimony to seek an explanation of them farther away, in any material force or effluence.

b. The second class of faith healing supports the same conclusion with even greater cogency. As I have already said, a healing force proceeding from a living saint is just conceivable; but one issuing from holy water, oil, thorns, old bones, nails, hairs, and bits of wood, is hardly within rational acceptance. Especially when it is noted that fictitious relics(such as the pieces of the "true cross," of which there are said to be enough to build a ship) are just as efficacious as others, we cannot fail to see that it is through the believing mind of the patient that the healing is achieved. As he approaches the holy shrine, to which he has perhaps made a long and toilsome pilgrimage—the longer and more toilsome the better—or is annointed on his sick bed, amid the tears and solemn prayers of his friends, the tide of religious emotion rises in the man's soul as in the presence of a living apostle.

The third class (c) of faith healings, wrought by charms and amulets, common among uneducated people to this day in England, and everywhere implicitly believed among savages, are so obviously cures wrought by mental stimulus alone (whenever wrought at all), that it is needless to speak of them at any length in this connection.

The fourth class (d) of cures includes those wrought by men supposed to possess natural healing powers. Here we find ourselves in the midst of the mesmeric and hypnotic controversies, into which I confess myself unable to penetrate. One point connected with them, which supports the view that faith healings are purely subjective, is—that the phenomena produced when a powerful mesmerist makes passes over his patient and seems to fling the magnetic fluid upon him, are very nearly matched by the phenomena produced by Braidism and hypnotism, where no mesmerist is concerned. As I have said, I feel incompetent to deal with this matter. There are many other cures, however, worked by faith in men or women quite independently of either mesmeric or religious pretensions, e. g., in the case of doctors of great reputation, whose mere presence in the sick room does more good than their prescriptions.

Lastly, we reach the fifth (e) class of faith healings—cures wrought by sham medical appliances supposed to possess natural healing powers. In this department of the subject we have certainly evidence galore of the power of purely mental impressions to heal disease. It is impossible to catalogue the absurd and absolutely inert drugs and agencies which—necessarily impotent on the body of the patient—have been powerful enough in their influence on his mind to enable that mind to cure his body. As Hunter remarked of one of them (a spider's web made into pills), it is necessary that they be administered "with the knowledge of the patient, else they have no effect at all." It is, then, his mental impression of their potency wherein all their potency resides. Dr. Carpenter admits that these sham medicines produce their effect not only in maladies in which nervous disorders have a share, but also in some, such as scurvy and gout, which "seem to depend on the existence of a definite perversion in the condition of the blood." He quotes from Lind "On Scurvy," a story of the siege of Breda in 1625, when the garrison were in so deplorable a state from scurvy that they were on the point of capitulating when the prince of Orange managed to send three small phials containing a decoction of chamomile and camphor to the doctors, who gave out that four or five drops in a gallon of water, was an infallible remedy for scurvy. The "prince's remedy" thoroughly checked the disease, and restored numbers who had been invalided. (See "Mental Physiology," p. 688.)

We have now briefly surveyed the different kinds of faith healings, from the noblest to the basest, and having found reason to attribute the cure to an influence exerted primarily on the mind of the patient, we are in a position to proceed to the main inquiry: What is the nature of that influence on the mind which enables it to conquer the diseases of the body?

We must dismiss the idle notion which seems so strangely to have contented the majority of writers and talkers on this subject, that it is enough to name some one faculty of the mind as concerned in the case, as if by so doing we explained the modus operandi of the cure; such, e. g., as hope, expectant attention, or imagination.

Most absurd is it to speak of imagination, as is constantly done even by thoughtful medical writers, as if it were a faculty which not only "images"—i. e., supplies unreal pictures in the mind—but is likewise capable of projecting itself into the material world as a force, like electricity. Indolent and baffled inquirers seem to think it convenient to refer in this way to imagination, because it appears a sort of Puck or Ariel among our faculties, and less amenable to law than memory or judgment, either of which it would be just as monstrous to cite as the proximate cause of the cure of a disease. It is to throw psychology into hotch-pot to apply the name of the vision-creating faculty to something which performs physical miracles. Of course it is open to any one to maintain in each given case that the original disease was imaginary, and consequently that the supposed cure was only the patient's restoration to reason; as when a man awakes from a dream and says, "I imagined I had lost my leg, and am glad to find I have done nothing of the kind." But it is sheer nonsense to describe his awakening and coming back to his senses as the result of imagination. When a disease has been accurately diagnosed by a competent physician, and pronounced to be serious, there is no room left for imagination to play in the cure. The cure, if wrought at all must be effected by some real agent, such as we assume the soul itself to be; for the mere picturing faculty which we call imagination can at the most have only supplied some stimulus to the mind or soul. But if neither imagination nor, for similar reasons, hope nor attention can of themselves produce a bodily disease, what are we to think of the entity, of which they are but faculties and phrases which must be the real agent—an agent which, without recognizable machinery suddenly steps forth to assuage pain and to send a flood of fresh vitality through the diseased tissues and palsied limbs of its own fleshly companion?

With all due hesitation in treating such a matter I would say that the truth seems to me to be this: That part of us which we call mind, soul, or spirit, and which in its ordinary relations with the body resembles a coupled dog, now pulling its companion its own way, now pulled by it in an opposite direction, is capable, under certain exceptional and yet obscure conditions, of entirely mastering its mate. It can render the body insensible to the pain of mutilation on the battlefield, or of fiery dissolution at the martyr's stake; and it can effect, independently of any extraneous agency, such a change in the processes of physical life—the circulation, the innervation, we know not what—as to banish disease and reinstate health.

So far as we understand them at present, the conditions under which this soul healing is accomplished seem always to be those of excitement. They are not capable of being produced voluntarily and spontaneously by the subject, but must be created by something outside of himself. That something may be—and in the higher kinds of soul healing I presume always is—an exalting idea presented to the mind either by some grand personality, or by a relic or token suggestive of sacred or patriotic sentiments, and touching those cords which vibrate deepest in the human heart. The theory recently put forth by Messrs. Myers and Gurney, speaking of Braidism—that the state in which the mind is abnormally concentrated on a bodily condition is that wherein its influence is at a maximum—is, in my humble opinion, the very reverse of the truth. It is, I hold, precisely when the mind is most completely lifted above the body and its pahological conditions, that it can exert its supreme spiritual faculty of healing. Concentration of the mind on the body is the source, I conceive, always of disease, not of health. There are also, as we have noted, other and lower stimulants of the excitement which may suffice to produce healing results; the most commonly effectual being the hope of recovery through the use of some nostrum.

The last and supreme problem regarding soul healing, can we find out how to apply it? is, of course, the real crux of all. Unfortunately the persons who are just now so busy in endeavoring to accomplish faith cures of the religious kind—some of them very humble and obviously silly folks, others on a much higher social and intellectual level—are all on the wrong tack (if the views stated in this paper be correct) to discover a real method of faith healing. They persist in looking "for the angel to stir the waters," instead of seeking the natural fount of hope and courage and piety in each man's bosom.*

We now reach the gravest side of this matter. If faith and piety and hope so elevate and stimulate the soul as to enable it to dispel disease like Gabriel in Guido's picture striking down Lucifer, then, beyond all doubt, mistrust and pessimism and fear must correspondingly depress the soul and leave Lucifer master of the situation. In this case also, it is literally true that "he who will save his life shall lose it." He who values his life beyond the purposes for which life was given, will forfeit it by his sickly anxieties. As Mill found of happiness, so it holds good of health; neither are to be attained by making it the chief object of mortal care. How then do we now stand as regards fear killing, the antithesis of faith healing? It seems to me that alongside of the gains which have accrued to our generation from the progress of hygienic science we have acquired habits of mind which go far to counterbalance them. Proverbially, a brave man dies but once, a coward a thousand times; and we are coming perilously near the verge of cowardice. Forty years ago Kingsley took up his parable, and preached well and wisely of religious obedience to the natural laws of health. But had his noble life lasted till now, his voice, I think, would have been loudest in the denunciation of that hygeiolatry which threatens to become our only religion. Kingsley adjured us to preserve health that we might the better serve God with vigorous brains and hands. We coddle ourselves, chiefly, it is to be feared, for our own comfort, and ardently cherish this life, having no particular expectation of another. While our fathers considered the most sublime line in French poetry to be the profession of Joad,

Je crains Dieu, cher Abner, et n'ai point
d'autre crainte;

we have ceased to fear God, and learned to fear microbes.

Two causes contribute to this change. One is the decline of faith; the other is that advancement of science which places us in the position of the poor Brahmin who was cruelly induced to look through a microscope and perceive all the unsuspected monsters in a drop of the water he was drinking. Whether the old belief in an over-ruling Providence was, or was not, well founded, its superior suitability to produce courage as contrasted with scientific physical determinism, is obvious enough. Upon our generation it has come to lose in great degree that Abhangigkeitsgefuhl which Schleiermacher deemed the very foundation of religion; and with it the sense of being

Safe in the hand of one disposing Power,
As in the natal, in the mortal hour.

No one talks now of "every bullet having its billet," or thinks of life as an "appointed span." The bullet proceeds by the laws of dynamics, and the length of life is determined by those of biology. If we desire that our days may be long in the land, we know that that end must be sought exclusively by sanitary and hygienic precautions; and that (barring accidents) it depends exclusively on how successfully we "struggle for existence" whether our existence will be extended for a longer or shorter period.

No one can doubt that this scientific view must prove in the long run more conducive to caution than the motion of a providential span, or of fate, or a planet, or kismet; and accordingly we practically find all around us evidences of redoubled care concerning the conditions of health. Of course in many directions this new caution is good and rational. More temperate diet, more airy bedrooms, better drained houses, and more effectual ablutions, are real improvements on the habits of our ancestors, but the excess to which hygenic precautions are carried, the proportion which such cares now occupy amid the serious interests of life, is becoming absurd, and conducting us rapidly to a state of things wherein, if we are not killed by fear, we are paralyzed by it for all natural enjoyment. The old healthful, buoyant spirit seems already fled from the majority of English homes. Aged people (from this and, no doubt, other concurrent causes) seldom exhibit now that gentle gaiety which so often brightened with hues of sunset the long, calm evening of a well-spent life, after the "six days' work" was done. The middle-aged are one and all hag-ridden by anxiety; and as to the young, if we may trust the reports which reach us from the great schools, a very marked change has come over them, curiously indicative of the sensitiveness of young souls to the chill breath of the Zeitgeist. The lads have grown colder and harder, and are interested in pecuniary profits rather than in nobler professional ambitions. Nay, we have been told (it is a large demand upon credulity!) that English schoolboys have almost ceased to be reckless about heat and cold, about eating indigestible things, about climbing trees and precipices, about going on deep water in unseaworthy boats; in short, about all those pursuits which excited the perennial alarms of their fond mothers. Many boys are to be found, it is stated (I write always under reservation), who may be described as Molly-coddles, so cautious are they about their health and their limbs. Urchins in round jackets speak of the danger of checking perspiration after cricket, and decline to partake of unripe apples and pastry on the never-before-heard-of ground of dyspepsia. Invited in the holidays to the ecstatic "lark" of a long excursion on horseback, they have declined with reference to the playfulness of their pony's heels; and have been seen to shrink from a puppy's caressing tongue, murmuring the ominous word "rabies." In short, our girls, who are just acquiring physical courage as a new virtue, are sometimes braver than their brothers, who think it "good form" to profess disinclination to risk their valuable persons.

It is not a small matter that this ebb should be noticeable anywhere in the tide of English manly courage. On the contrary, if it continue the results must be deplorable. For our present purpose it is enough to point out that all this new-born caution about their health (to which, perhaps, the very undesirable study of physiology by schoolboys has in some schools contributed) will at the best create a generation of hypochondriacs and valitudinarians, not of robust and stalwart Englishmen.

The fears of which we have been speaking, fostered by over-attention to the conditions of health and longevity, may not literally kill anybody. It may be carrying the paradox too far to say we shall die of them, or even that they may not be successful in lengthening our calendar by a few days. But the gain will be nil if they render every one of those days pitiful and mean and mesquin. Life, to be worth living, must be concerned with quite other things besides diseases, draughts and drains; and we want to live, not merely to postpone death and die by inches through half a century.

The general pessimism which weighs on us all, the atra cura who has mounted behind every horseman and whom no amount of tobacco smoking seems to dislodge, are lowering the vitality of our generation. Hope is the true elixir vitæ, and instead of hoping all things with St. Paul, we fear all things with Dr. Richardson. One of the greatest artists of the day gave us two years ago—possibly without precisely intending it—a bitter satire on our age. The radiant goddess, whom Collins described with "eyes so fair," trilling her "delighted measure," Mr. Watts depicted as a blindfolded patient out of the Brompton hospital, bent in a curve like an ammonite rather than a vertebrate creature, over a broken-stringed lyre. Such is the hope of the closing decades of the Victorian era!

[Concluded next Sunday.]

* I am informed that the "true" faith-healing people do not allow the use of any "means" whatever.

If any reader desire to see the exceeding nonsense which can be written and printed on this subject, he is referred to a book which has passed through nine editions in America—viz., "Science and Health, with a Key to the Scriptures," by Mrs. Eddy, president of the Massachusetts Metaphysical college (2 vols. 8vo, Boston, 1884). The following are specimens of the counsels of Mrs. Eddy on "healing the sick," vol. 1., p. 180:

"Argue there is no disease. It is but the evidence and object of the senses you have to destroy, not a reality....Say to the patient mentally, you are not sick, and hold your ground with the skill of a lawyer. Argue down the witnesses against your plea, and you will destroy those witnesses, and the disease will disappear. Rely not in the least on the evidence of the senses, but on the evidences in metaphysical science of man's harmony and immortality....Avoid talking disease to the sick. Make no unnecessary inquiries relative to their symptoms; never ....give them names for their diseases....

"If the case to be treated is consumption, begin your argument by taking up the leading points....showing that it is not inherited; that inflammation, tubercles, hæmorrhage, and decomposition are but thoughts, beliefs, mental images before mortal minds, not the immortal mind. Hence they are not the truth of man, and should be treated as error—put out of mind, and then they will disappear from the body...."

And again, vol. 1, p. 136: "Conservation or dishonesty(!) in the theory or practice of metaphysics applied to the treatment of disease would betray a gross ignorance of the whole subject. Disease can neither be treated nor healed metaphysically if drugs or external applications are employed; and petitioning a personal God to do your work, or enable you to do it, is not metaphysics wherein truth works, and you understand the divine principle of your demonstration. Animal magnetism, clairvoyance, mediumship, or mesmerism are antagonistic to this science."

Vol. 1., p. 248: "Bathing and brushing, to correct the secretions or remove unhealthy exhalations from the cuticle, receive a useful rebuke from Christian healing, that makes not clean the outside of the platter."

Vol. 1., p. 228: "That mother is not a metaphysician, and her affections need better aid to their duration, who says to her child, 'you look sick,' or 'you look tired.' etc., or who goes to her little one fallen on her nose on the carpet, and moaning more childishly than her child, says, 'Mamma knows you are hurt.' Drugs, cataplasms and whisky are shocking substitutes for the dignity and potency of mind and the divine power to heal. Through the byways of physiology and materia medica to lead man into temptation in every direction is pitiful."

"Palsy is a belief that attacks mortal mind, and this mind paralyzes the body through fear. Ossification or any abnormal condition of the bones is the action of mortal mind as directly as insanity. Bones have no more substance than thoughts, and are only what they are named by and appear to mortal mind. What we call matter was primitively error in solution." (!)

P. 253: "Called to the bed of death, what remedy have we in matter when all its remedies have failed? Mind must be our only resort at last. There is no death. All is mind. There is no matter: 'He is not dead, but sleepeth.'"

What the "president" means by "metaphysics" in these volumes can only be known, we should think, by the fortunate students of the Massachusetts Metaphysical College.

Scalp Grafts Wanted.

Hartford Times: Several months ago Miss Emma Neuman, of Bristol, had her scalp torn from her head by her hair catching in machinery in the mill where she was employed. Dr. J. Wilson of Bristol has been diligently engaged since in building up a new scalp by grafting on the head minute bits of skin taken from the arms of various persons. Probably he has exhausted the list of Miss Neuman's friends who were willing to contribute to her relief, for at this time he calls for ouside aid in the following card:

"Young persons, not over thirty, who are willing to confer a favor on Miss Emma Neuman, will greatly oblige her and her friends if they will allow seeds for grafting in the new scalp to be taken from their arms. The family and friends have furnished material, and a good scalp is being made, but the lack of sufficient material is now the greatest obstacle in successfully covering the entire head. The piece for grafting is pinched up and slipped off without pain or bad effect on the person. Those who will assist the recovery of Miss Neuman may call on Dr. Wilson at his office at 9:30 a. m. or notify him, and arrangements will be made for the convenience of parties."

ELECTRICITY IN HARNESS.

Great Expectations Regarding Electrical Inventions.

THE TELEPHONE IN CHINA.

Lighting Cars With Electricity—How Rods Should be Placed—Magnitude of the Telegraph Business—Queer Electric Antics.

The Telephone in China.

Chicago Tribune: The syndicate organized by Wharton Barker and Si Hung Chang for the introdction of a telephone system in China has a fine field before it. The telephone is one of the simplest, handiest, and most useful of modern inventions, and it has come into such general use the world over, that it is only surprising the Chinese have delayed taking it up so long. So far as the Chinese are concerned the telephone must be ranked as marking the introduction of a new art, and not, as has been so strongly claimed in this country, "an improvement in telegraphy." The Chinese have never been able to use the telegraph, owing to the existence of over 4,000 characters in their alphabet. Even if a system of dots and dashes could be devised to represent such an alphabet it would be practically impossible to employ it in any commercial use of the telegraph. Of course no such difficulties attend the telephone, which will "talk" Chinese or any other tongue with as much accuracy as it does English, quality of voice and ennunciation being equal. The telephone, therefore, offers the Chinese their first opportunity to secure the speedy transmission of intelligence between distant parts of the empire. Whenever the Chinese have used the telegraph in other countries, as in sending messages to diplomatic agents and ministers, the dispatches had to be sent in English and translated at both the sending and receiving stations.

Odd as it may seem, there is a strong probability that the telephone may receive great improvement in China. The purpose there is to use it not simply inside towns and cities but for long distance communication between remote points, and hence it is likely that the capacity of the instrument for such work will be greatly improved. In this country the contract between the Western Union and the Bell company binds the latter not to compete with the telegraph or give the public the advantages of long-distance communication by telephone. The Bell company is in fact bribed not to permit any considerable improvement of the telephone service. In China, on the contrary, every inducement is held out to have the invention brought up to its full capacity. If the Chinese make any such general use of the telephone as is expected, marked improvements will doubtless follow, and by the time the Bell patent expires or is set aside by the supreme court, the United States may adopt a system of communication as simple, rapid, cheap and satisfactory as the telephone service of China.

Underground Wires.

Boston Commercial Bulletin: The placing of wires underground has been often advocated by the newspapers and would no doubt be a popular movement with the great body of the citizens. The great web of overhead wires is not only an eyesore but an incumbrance and injury to roofs and a menance to the safety of property in preventing proper work by firemen in addition to being, unless properly issulated, dangerous to people who come in contact with them as well as liable to cause fires. Poles in a public street are a nuisance and only partially lessen the objections to overhead wires.

It is merely a question of years when the wires in all the great cities must to a great extent go underground and if no practical system exists it must be devised, for the popular sentiment on this matter is becoming stronger every day. The matter of underground wires has received some attention in Boston from the various electric companies and from the city government, for several years past, but has been given no such thorough attention as in other American cities where commissions have been appointed to investigate various systems and make arrangements for placing all wires underground.

In Boston, about five or six years ago an attempt was made to run arc lights underground in front of the Providence railroad station, but it was not successful, owing to the disintegation of the insulating material. For the past three or four years a system of underground wires has been in successful use for a short distance, in lighting the Park theatre, the light being the Edison incandescent. The only telegraph line underground is a line from the Western Union headquarters on State street down through Adams square to the Eastern depot. It is not a good system, being merely iron pipes through which the ordinary cables are drawn. As the pipes have been down for a few years the insulating material has rotted, as no attempt has been made to renew it.

Last year marked the only attempt of any magnitude to put wires underground. The Edison Electric Light company applied to the city government for permission to lay wires underground, and the New England Telephone and Telegraph company asked for the same privileges, but on different streets, and this year they have asked for additional privileges, and each has now some miles of conduit underground, some of it in the principal streets, and propose to extend their systems further underground in the city proper.

The systems which these concerns have adopted have so far worked successfully, though they have not been in operation a sufficient length of time to judge. The Edison system consists of an iron pipe of different diameters, according to the amount of wires to be placed in them. The pipe is covered with an impervious asphalt preparation. It is about twenty-foot lengths, and the joints are boxed and rendered impervious by a coating at the joints. The wires are put inside the pipe in cables, each wire being insulated from the other by rubber insulating preparation, and the cables are surrounded with an asphalt insulating compound.

These pipes can be tapped like water or gas pipes. The system in use by the telephone company consists of cresoted hard pine boxes about fifteen inches square and about twenty feet long. These boxes are subdivided by creosoted wooden partitions into nine chambers. In each of these chambers is laid a lead pipe which contains a hundred or more wires, according to their size, each wire being insulated by being wound with cotton thread soaked with paraffine. The creosoted boxes are covered with tar paper and tar at the joints, over which strips of creosoted planks are laid.

Rights have also been granted to the American Conduit company to lay its conduits, which consists of a conduit or pipe composed of cement and sand, chemically treated to render it impervious to water. Each conduit is divided into chambers. The practical value of this system is yet to be fully determined. From the testimony of noted electricians it appears that incandescent electric light wires, telegraph wires and telephone wires can be laid underground without any danger to the public, the only trouble being to get a perfect system of insulation, though this can be arrived at.

The current of the above wires is not dangerous, but the very much stronger current of the arc light is very dangerous unless properly insulated, and there are great doubts among electricians of the success of any system of arc lights underground, though it is claimed that they are successfully operated in Philadelphia. Outside of the arc light wires the main objection to placing wires underground by the companies is the question of expense, but this will not count in the face of a strong public demand for it.

A Carbon Feeder For Electric Lights.

Hartford (Conn.) Times: Mr. Julian Denison, an employe of the Connecticut Electric company, of New Haven, has made an invention of special importance to electric light companies. It is an apparatus to feed new carbons automatically as fast as the old ones burn out and are exhausted. In plain words, it does away with the man and ladder now in use, whereby the carbons have to be thrown to the street and fresh ones put in. The carbon feeder or magazine will contain seventeen carbons, ten upper and seven lower sticks. Under the Denison patent an electric light will burn steadily without watching for, say, ninety hours or more on a stretch. The first public experiment will probably be with a magazine, throwing six upper carbons calculated to burn for sixty hours. The magazine will revolve as fast as the lighted carbons become exhausted and drop new ones into place in an instant. It is practically a self-feeder, and is calculated to do away with the constant worry and fuss under the present system of adjusting carbons. Within a week or so one of the Denison patent feeders will be attached to an electric light in New Haven.

Queer Electric Antics.

Hartford (Conn.) Times: Over in New Preston, in the Litchfield county town of Washington, the other day, a lightning bolt struck E. J. Cable's house with some of the strangest results on record. The lightning rods were evidently of no protection. As soon as the smoke cleared away it was found that the north side of the house had been badly shattered, the clapboards blown off and the windows and glass flung out into the grass. Plaster had been torn off of every room as the lightning distributed itself along the beams in divers directions. Closed doors were wrenched off their hinges and hurled across the rooms, and everything, as the urchins say, "knocked fourteen ways from Sunday." Two pounds of blasting powder were exploded, but a flask of rifle powder near by escaped. The side of a big bottle containing turpentine was knocked out, but the fluid did not catch fire. Seemingly the largest current ran easterly, shivering the sill of the house, dodged into the pantry, tore a big hole in the cupboard, setting it on fire, bored holes as large as a man's thumb through two tin pails, shattered some dishes, skittered across the floor, splintered the woodwork, tore off the plaster, almost melted a hole through the cast iron sink and plunged into the water pipe, ruining it, stopping the flow of waters. Down cellar, the fluid ran along the chain of a steel trap which was set for rats and sprung the trap. Several holes were scorched in the flannel case of a violoncello, and the instrument was shattered. Several lamps and a clock were knocked off a mantel. The clock was destroyed with the hands pointing exactly at 6:15, which was the precise instant of the shock.

One person who saw the flash said it was a foot wide, and another said it looked as red as fire. John Gunn, John Ludgate and Mr. Gahan ran over from Bolle's marble shop, where they were at work, expecting to find everybody dead, but were agreeably surprised to find all the inmates lively and flinging water with great energy. The astonishing thing is that no one was hurt or even shocked!

Great Electrical Expectations.

Electrical Review: The public expect much of improvements in which electricity is employed. Millions may be spent in digging a canal where the channel fills up from a slow movement of the soil as fast as it is removed by the dredging machines; failure after failure may be recorded in the annals of mining developments until success seems to be the exception, but let there be a failure of an electrical piece of mechanism and every one wonders. In the early days of the developement of the systems of electric lighting, storage, and transmission of power, there were few failures, and those were instructive. The first devices for automatically lighting and extinguishing gas were somewhat crude. Now, however, with careful installation, faiure is unknown; yet ten years ago the great system of lighting by electricity had only been dreamed of. It required thirty years to perfect the system of telegraphy. The methods used in gas-making were not improved for a long period. And it is possibly that the old process would have been in use for half a century longer if the competition of electric lighting had not necessitated improvements. So much has been accomplished that still more is expected of our electricians. The inventor or experimenter was once called a crank. Now large sums of money are expended yearly in systematic experimenting, the highest skill, education and abiljty is employed and the professors in the universities and technical schools are retained as consulting electricians.

Magnitude of the Telegraph Business.

New York Commercial Advertiser: No country in the world begins to approach the United States in the magnitude of its telegraphic business. In 1886 there were 667,710 miles of wire in this country. France came next, with 205,470 miles; Germany third, 180,000 miles, and Great Britain fourth, with 158,568 miles. It is not only in extent of plant that the United States takes first rank. We not only have wires, but we use them. In 1886 the number of messages sent in this country was 72,000,000, more than double the number sent in Great Britain, which came second, with 33,278,459 messages, France taking theithird place, with 29,452,708 messages, and Germany fourth, with 18,749,855. There are also now in existence in the United States 128,231 miles of wires used by telephone companies, through which, in 1886, 312,605,710 messages were transmitted. There is no data for comparison at hand, but a recent writer in the Nineteenth Century makes the statement that the telephone is, practically speaking, not in general use Great Britain, and that its benefits are not appreciated to any appreciable extent on the continent.

Lightning-Rods.

Engineering News: Prof. Michael Faraday says that the conductor should be of half-inch copper rod, and should rise above the top of a chimney by a quantity equal to the width of the chimney at the top. The lengths of rod should be well joined metallically to each other, and this is perhaps best done by screwing the ends into a copper socket. The connection at the bottom should be good; if there are any pump pipes at hand going into a well they should be useful in that respect. As respects electrical conduction, no advantage is gained by expanding the rod horizontally into a strap or tube—surface does nothing; the solid section is the essential element. There is no occasion of insulation of the conductor for this reason. A flash of lightning has an intensity that enables it to break through many hundred yards, perhaps miles, of air, and therefore an insulation of 6 inches or 1 foot in length could have no power in preventing its lead to the brickwork, supposing that the conductor were not able to carry it away. Again 6 inches or 1 foot is so little that it is equivalent almost to nothing. A very feble electricity could break through that barrier, and a flash that could not break 5 or 10 feet could do no harm to the chimney. A very great point is to have no insulated masses of metal. If, therefore, hoops are put around the chimney each should be connected metallically with the conductor, otherwise a flash might strike a hoop at a corner on the opposite side on passing to the conductor, from the nearest part of the hoop, there might be an explosion, and the chimney injured there or even broken through. Again, no rods or ties of metal should be wrought into the chimney parallel to its length, and therefore, to the conductor, and then to be left unconnected, with it. The rod may be close along the brick or stone, it makes no difference. There will be no need of a rod on each side of the building, but let the cast iron hoop and others you speak of be connected with the rod, if there were rods on every side of the chimney. A three-fourth rod is no doubt better than a half inch, and, except for the expense, I like it better. But a half inch has never yet failed. A rod at Coutt's brewery has been put up 1½ inches in diameter; but they did not mind expense. The Nelson Column in London has a half-inch rod—three fourths is better. I do not know of any case of harm from hoop-iron inclosed in the building, but if not in connection with the conductor I should not like it; even then it might cause harm if the lightning took the end furthest from the conductor.

Electric Springs.

St. Louis, July 12.—To the Editor of the Globe-Democrat: The peculiar freaks of lightning are proverbial, and at times its wonderful power is manifested in disastrous results, while on other occasions it proves to be beneficial. In this article, with your kind permission, it is my pleasure to chronicle a beneficial freak.

On May 29, 1887, near Lorena, McLennan county, Tex., lightning struck on a limestone cropping on the prairie land owned by Mr. H. C. Williams, at a point about one mile west of his residence. Several persons witnessed the electrical discharge, and they state the stroke was a very heavy one, as the appearance of the earth clearly demonstrates. The surroundings looked as though they had been blown up with dynamite, and pieces of rock were scattered around in every direction for a distance of seventy-five to 100 yards. Within 100 yards of where the spring lightning struck there is a periodical, which flows only in very wet weather, but which has been dry for over a year. There are several other springs with a half-mile that have all been dry for over a year. That part of the country has had a severe drought for the past two years and water is very scarce.

Upon examination of the place where the discharge took place, it was noticed that a number of springs had broken forth, discharging a stream of crystal purity in volume sufficient to fill a four-inch pipe. This heavy flow continued for two weeks, but since then the volume has slightly diminished. Mr. Williams states that these springs will be of untold value to him if they prove permanent, as he will be able to utilize the water to irrigate land that will be highly productive. The water discharged varies in temperature, some being delightfully cold.

My theory of the opening of these springs is that the discharge falling on the stratified limestone forced its way through the stratified formations, which probably contained some moisture, and found a line of least resistance over which it passed to some subterranean cavern or reservoir, which it opened and permitted the confined waters to pass out. On the other hand it may have simply diverted a subterranean flow that supplied some other spring or springs, causing it to break forth at this point, and possibly stopping the flow of some other springs or greatly diminishing their volume.

The Electric Motor.

Memphis Avalanche: Whirling along through the open country at the rate of forty or fifty miles an hour, comfortably seated by an open window in a well-ventilated coach, the mind of the summer traveler is not likely to busy itself with speculations upon the development of the electric motor as if he sat behind a pair of froth-covered animals tugging along with a street car load of passengers. Sympathy with the brutes is calculated to make a warm man warmer and a hot man hotter. Electricity would be cleaner, cooler and cheaper, if anything is to be argued from the successful trials lately made with improved motors in Philadelphia. Its use is not a new thing, but it has never yet been so successfully applied as to lead to its general adoption. It is still the exception rather than the rule. Montgomery, Ala., has a line of street cars run by electricity, so has Kansas City, Mo., and similar lines run out of Baltimore and Hamden. New York city is about to try the experiment on Fulton street and Philadelphia has a line fairly under way. The Philadelphia Press is inclined to the view that as soon as the single question of cost can be overcome, stored electricity as a motor is likely to displace both the use of horses and the cable system in that and other cities. Considerable progress has been made in the direction of electric street cars since the days of the Centennial, when a car was successfully run about the grounds. The objection to overhead wires common to all cities will be a bar to the introduction of that crude method exceyt for suburbau lines, and it is plain that the plan of sending the current along the rails will never be popular until horses are shod with rubber instead of iron. A current in order to be effective is strong enough to shock horses whose feet touch the rails. If the plan of placing the conduit below the rails can be brought to perfection, the problem will be practically solved. Here is a rich field for the electrician.

Electricity as a Street-Car Motor.

Philadelphia correspondence New York World: A satisfactory test of a surface car operated by electricity was made yesterday at the establishment of Wharton & Co., in the presence of a number of railway officials. The car was supplied by eighty-four storage batteries placed beneath the seats, which furnished electricity to a Sprague motor geared to the axle of the front wheels. The car was run about experimentally, after which it was run out on the Union line and switched to the tracks of the Spruce and Pine streets line. A round trip was made, the car, when the track was clear for any considerable distance, attaining a speed of eight miles an hour. At times the car was completely filled, and it was considered that a thoroughly practical test was given it. All the sharp curves were rounded satisfactorily. At all times the car was under absolute control. The man in charge can, by the device at his hand, readily stop, start and back the car as well as regulate its speed. An electric bell is sounded as a warning signal. By means of push-buttons the conductor can signal the driver to stop or start. It is estimated that the cost of running the electric cars is from two-thirds to three-fourths the cost of horse-power. A car of this kind is running rgularly in London and another in Berlin.

An Electric Bath.

Chicago News: During a thunderstorm at Hazelton, Pa., lightning struck a penknife in the hands of High Sheriff Zierdt, who was bathing in a tub. When he recovered he found nothing but small splinters of the tub he had been bathing in, and the water it contained was equally distributed over the floor, as if done with a mop in the hands of a scrub-woman. The metal in the knife was melted. No other evidence that the lightning had entered the room could be found.

Electric Brevities.

There is a scarcity of skilled labor in electrical establishments. Three large Edison stations to supply power are to be erected in the upper part of New York city. A trial will soon be made in this city with electricity in street cars. Blocks of cheap houses are being fitted up with the finest electrical appliances, and electrical supply manufacturers are expanding their plants daily.

It is stated in Newburg, N. Y., that in a shipyard in that place there is being constructed the first vessel to be propelled by electricity ever built in the United States. It is a yacht 37 feet long, 7 feet wide and 5 feet deep. It is to be run by stored electricity. It is building for a Newark (N. J.,) electric company, and will run between this city and New York.

A dynamo of 22,000 pounds weight and 500 horse power, with an armature of forty-seven inches diameter, is at work at Comlef, Ala., to separate aluminum from clay.

American electrical supply houses are building up a large trade in Australia. A company has been organized with a capital of $500,000 to control the business.

A French engineer soaks rags in petroleum and ignites them by electricity at fixed intervals when the men are out of the mines to burn the fire-damp.

A Musical Disagreement.

Arkansas Traveler: Congregational singing may carry the appearance of brotherly love and sisterly regard (if there is such a thing), but it is sometimes far from entertaining to the person who takes no part in the performance. Recently, at a very fashionable place of religious worship, where many untrained and unmusical voices run riot over persuasive tunes, a man who knew more about the grain market than of "buckwheat lifted up his presumed voice to assist in the presentation of a hymn of long and hallowed standing. A modest but determined-looking fellow who stood just in front of him turned around, touched the singer on the arm and said:

"Do you live in this town?"

"Yes," the singer replied, after allowing his voice to fall to the floor.

"Are you a member of this congregation?"

"I am, sir."

"Is it not one of the aims of this church to treat strangers with marked courtesy?"

"It is."

"Well, then, will you please do me a favor?"

"Certainly, if it is within my power. What can I do for you?"

"Hush."

"Hush!" the singer gasped.

"That's what I said."

"Is it possible, sir, that you don't want a man to sing?"

"Oh, I don't mind a man's singing; don't care how much he sings, but I don't want him to give himself up to such distressing noises as you have been making."

"My gracious alive! has it come to such a pass that a man can't sing in his own church?"

"It has come to such a pass that you can't sing in any church."

"You are insulting, sir."

"And you are tormenting."

"If you don't like my singing——"

"I tell you that I've got no objection to anybody's singing."

"Well, if you don't like me, you——"

"Got no objections to you at all."

By this time the hymn was finished and the congregation sat down, but pretty soon another hymn was announced. The annoying singer again lifted his voice. The man in front of him turned and touched him on the arm.

"What do you want with me, sir?"

"Want you to hush."

"I came here to sing and——"

"Why don't you sing then? Don't object to your singing, understand, but to tell you the truth, your voice carries me back to a time when I was very unhappy, a time when I raised hogs in the south, and, sir, since then, whenever I hear anything that sounds like——"

"I won't worship in the same house with you, sir," said the singer. "I will leave this place."

"Thank you," the stranger replied, and, smoothing out the unpleasant expression from his face, he sat himself down and gave himself up to the enjoyment of the sermon.

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