ELECTRICAL WATER LEVEL INDICATOR.

The apparatus we illustrate has been made by the India Rubber, Guttapercha, and Telegraph Works Company, Limited, for indicating, at a distance, the height of water in wells or tanks, and is described by *Engineering* as follows: Electricity is the agent used in transmitting the records from the tank to the engine house. The apparatus consists of two parts, the transmitter and the recorder. The construction of the former is shown in Figs. 1 and 2. It is placed over the tank, and consists of a framework supporting the shaft, on which is keyed a chain wheel, *b*, over which passes a chain attached to the float in the tank.

Fig. 3.

On the same shaft is a spurwheel, *c*, gearing with a pinion which runs loose on a second shaft above the first. On this shaft is keyed a boss carrying two stops opposite each other, against one or the other of which a pin fixed on the pinion comes in contact, when the main shaft is rotated by the float. It will be seen that either pinion or shaft can thus be moved independently of each other through an angle of about 180°. At one end of the shaft is a crank, connected to the piston rod of the oscillating dashpot, *e*, which insures that all motions of the transmitting apparatus shall be dead beat. Behind this crank is a counterweight, *f*, which is loose on the shaft, but its relative motion to this shaft is limited by a couple of stops, with one or the other of which it comes into contact as the shaft rotates. At the outer end of the shaft is the cam operating the electric contacts, by which the indications of the float are finally transmitted to the engine house. Suppose, for example, the water rises in the tank, then the main shaft is rotated by the float in a definite direction, and likewise the pinion, *d*. This pinion soon comes in contact with one of the stops already mentioned, and then its shaft rotates with it, raising the counterweight. When this counterweight has reached its highest position, any further motion causes it to fall over against its second stop; it then pulls round the shaft with it, this motion being possible because the pinion is not keyed to its shaft. The counterweight comes to rest in its lowest position, but during its fall it has rotated its shaft through an angle of nearly 180°, and in the course of this motion the cams at the outer end of the shaft have made an electric contact, and sent a signal to the engine house. The contact is commenced shortly after the counterweight has begun its descent, and is broken before it reaches its lowest position. The dashpot insures that this contact shall be sufficiently prolonged to insure a sharp and distinct signal being sent to the recorder at the other end of the line.

The transmitting contacts are best seen in Fig. 2, where the connections are also indicated. E and L stand for earth and line respectively, and C and Z for the zinc and copper poles of the battery. The two rods, *g* and *h*, are pressed by springs against a contact piece placed between them, which is permanently connected to the zinc pole. Outside of these rods are the spring contacts, which are permanently connected to the copper element, but in the normal state of affairs the rods stand clear of these contacts. It will be further noted that one of the rods is connected to the line and the other to earth. Between the upper ends of these rods is an ivory pin, fixed in a lever, *k*, which carries at its upper end followers on which the cam acts. When this cam is rotated it gears with *k*, below, and deflecting this, the ivory pin moves one or other of the rods, *g*, *h*, away from the zinc contact, and later on brings it into contact with one of the copper terminals, *i* or *j*, as the case may be. This done, the circuit is complete and the signal sent to the recorder. It should be observed that the first part of the motion, by which one of the rods is raised from the zinc contact, is effected by the small central portion of the cam, while the counterweight already mentioned is being raised; the copper contact, on the other hand, is made by the exterior of the cam as the counterweight completes the revolution of its shaft. The net result of the above operations is that, if the float in the well rises, a current is sent through the line in one direction, and if it falls, in the opposite direction, and the currents are made to work a recorder at the other end of the line, the construction of which we will now describe. The dial which shows the feet and inches is illustrated in Fig. 3, while the details of its construction will be understood from Fig. 4. The apparatus consists essentially of a couple of electro-magnets, which work pawls gearing with an escape

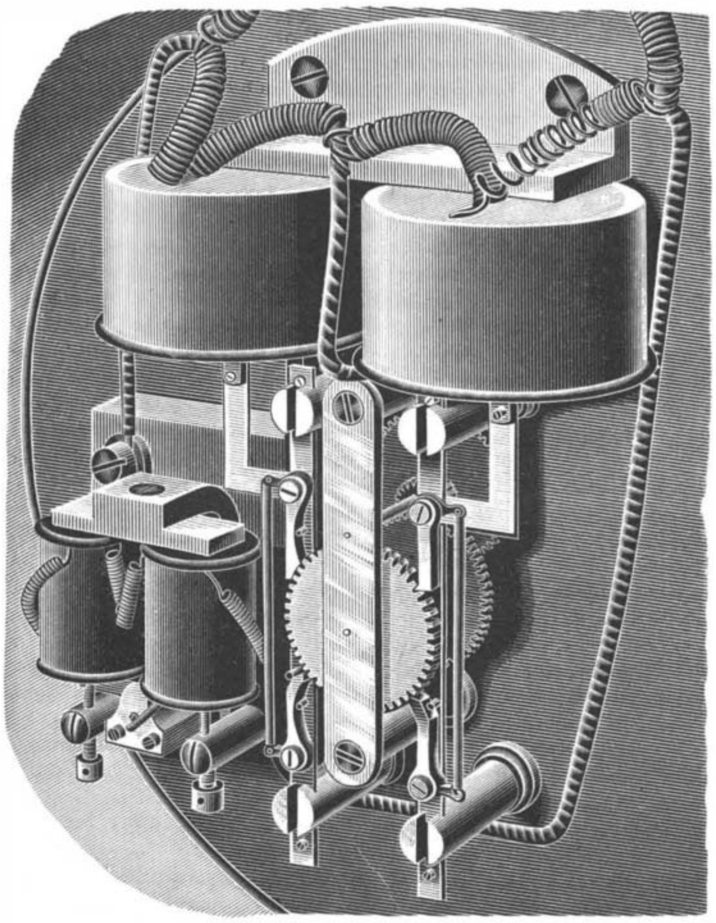
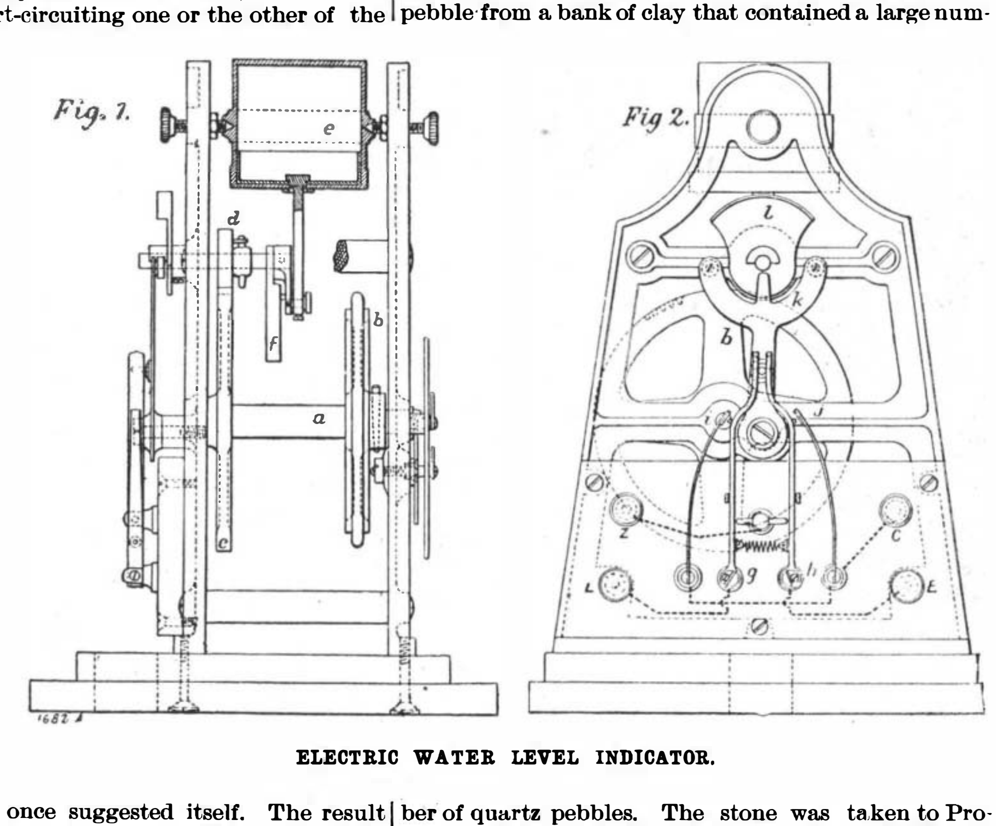


Fig. 4.—ELECTRIC WATER LEVEL INDICATOR.

wheel below them as shown. To perform the requisite motion one pawl only is required per magnet, but the upper pawls serve to lock the wheel when the magnets are not acting. The two magnets are in series with the line, and hence the current passing through both magnets would tend to raise the pawls on each side of the escape wheel, and no motion would accordingly be made. It is necessary, therefore, that the current shall act on one magnet only when a rise is to be recorded, and on the other only when a fall of water level occurs, *i. e.*, according as positive or negative currents are sent into the line. This is accomplished by the polarized relay shown on the left, which actuates a contact, short-circuiting one or the other of the main magnets, as the current passed is positive or negative.

The recording apparatus illustrated is of the dial type, but the makers also supply an autographic apparatus which records the level by means of a pencil drawing a stepped curve on a cylinder.



ELECTRIC WATER LEVEL INDICATOR.

THE success of the electric launches on the lagoons of the World's Fair at Chicago was so marked, says the *Electrical Engineer*, that the idea of trying the same boats on the lagoons and canals of Venice at once suggested itself. The result was that one of the launches which had been in service at Jackson Park from the early spring was shipped last September to Venice, her motor and batteries being removed from the hull for the Atlantic voyage. Arrived at destination, the various parts were all reassembled, and under the fitting name of Venezia the little craft made her first appearance in the waters so long monopolized by the song and oar of Adria's gondolier. It is needless to say that she created a sensation, for her quiet and graceful performance, so different from the noisy, fussy movements of the steam launch, gave immediate proof that in the electric boat the time-honored gondolier had at last met a rival against which no halo of poetry and romance would help it greatly. A picture of the Venezia was made recently as she lay in the waters of the Grand Canal right opposite the Doge's Palace. Mr. R. N. Chamberlain, whose intelligent engineering supervision did so much to render the boats a success at the Fair, where they carried 800,000 passengers, proceeded to Venice as soon as he could be spared from Chicago, and had the boat fixed up in good shape. She now has 68 cells in four groups, governed by a mechanical controller. In order to protect her hull against the weeds and action of the canal water, her hull has been sheathed with copper. The success of the boat is indubitable, but we understand that the fleet of which she is the prototype will all be longer, so as to afford greater passenger capacity. Her deck housing is slightly changed, it being now made to conform to the general style of the quaint cabin top seen on the gondolas in Venice.

A Fortune for Some One.

This is the heading of a paragraph we find in the *Mail and Express*. The writer had been thinking and concludes that the man who invents something by which the thousands of cubic feet of steam which continuously escapes from the boilers of this and other big cities can be utilized has in his grasp the biggest fortune ever heard of on the American continent. Go up to the top of one of the tall down-town office buildings and look out across the roofs of the city. For block after block and mile after mile can be seen hundreds and thousands of escape valves pouring out volumes of white vapor. Enough steam is lost in New York alone in an hour to run a great manufacturing city for a week. The loss throughout the country in the same way is something stupendous.

Inventive genius has done much for the human race. It has taught mankind to utilize most of the products of nature. Hereafter it must lead to the conservation of natural resources and to the hoarding of natural capabilities. The human race is developing very fast; so fast that it will not be many centuries before everything that can sustain life or add its quota to the comfort of mankind will be enormously valuable. Only by the most skillful husbandry of their resources do the people of the Chinese empire manage to live. The same thing is more or less true of England and on the Continent, and what has been the rule in older countries must have its counterpart in this.

Already forestry commissions, fish commissions, and similar aids to the saving of natural sources have been instituted. That the need of such commissions should already be felt is ominous. Within a few generations such economies will not be expedients; they will be necessities.

AN OREGON DIAMOND.—In October, 1893, a boy picked up, near Oregon, Wis., a small semi-transparent pebble from a bank of clay that contained a large number of quartz pebbles. The stone was taken to Professor William H. Hobbs, of the University of Wisconsin, at Madison, and it was found to be a genuine diamond. It proved to be an elongated dodecahedral crystal, weighing 3⅞ carats. Its color is slightly grayish green. This, however, is only superficial, and it will undoubtedly cut a white stone, although not of great value.

Longevity.

At a recent meeting of the New York Academy of Medicine, Charles E. Quimby, M.D., chairman, the subject for discussion was the "Specific and Relative Value of the Important Factors of Longevity."

In arranging the discussion on this subject, the chairman had requested examiners for several of the life insurance companies as well as others to take part. He first called upon Dr. E. W. Lambert, who said he responded to the invitation with some diffidence, because he found the subject so complex, the factors so many and apparently contradictory. Of course, in his long experience as examiner for life insurance, the question of longevity had naturally presented itself. In spite of the long time this question had been before him, he could not say that it had particularly cleared up; it was still debatable as to what were absolutely important and also relatively important factors of longevity in individual cases. In the first place, however, we must exclude two words, viz., always and never.

Long-lived Ancestry.—The first important factor, it seemed to him, was that the man should have a good inheritance. No one could deny that long life on the part of ancestry on both sides of the house was an important factor in considering the longevity of the individual. Indeed, he knew of no other single factor of as great importance, yet one might feel staggered at times to meet with a case in which a mixture of the blood of a long-lived couple resulted in a short-lived progeny. This was the exception and due to peculiar combination.

Environment.—The next question of importance was that of environment, or the conditions in which a man was born. A comfortable, well-protected, well-organized household, and sanitary surroundings were pretty sure to carry the child through early life with all its attending accidents.

Temperament.—The next important factor was temperament. It seemed to Dr. Lambert that a placid, calm, philosophical way of looking at things was much more conducive to longevity than the irritable, fretting, fussy, fault-finding way observed in some people. This was well illustrated in the case of animals. In a span of horses going up Fifth Avenue it would be observed often that one horse would go quietly along and do all the pulling, while his mate danced, pranced, and cavorted around, wasting his energy and shortening his life with little good.

Manner of Living.—The next matter of importance, he thought, was the way of living. The man who was careful, considerate, and moderate in the exercise of all his faculties, whether animal or intellectual, was one who would last longer than the man who over-indulged in any one of the numerous things which go to make up life. The men who broke down and died prematurely were usually those who had not lived temperately. It was often said that men worked themselves to death, yet the more he observed people, the more did he become convinced of the correctness of the Western editor's assertion that men do not die of overwork, but rather of what they take between work. He thought it would be found that what killed men was not work, but what they did outside of their work; yet he did not believe in total abstinence in any sense. There was no law, with regard to eating and drinking and manner of living, which could be laid down as applicable to all individuals. Each person must find out the law which applied to himself and obey it. Each person could usually discover what agreed and what disagreed with him, and if longevity was sought after, he would have to avoid the things which evidently disagreed with him and seek the things which did agree with him.

Exceptions.—Dr. Lambert added that he was aware that to what he had said one could bring exceptions by the thousand. Take any one of the factors which had been mentioned, and one could mention men who had lived long without any; for instance, with regard to alcohol, men could be found who had done nothing much but drink all their lives, and yet had lived to a full age; but when one found a man who had drank hard all his life, he could be pretty sure he had done nothing else.

All were subjected to circumstances which they could not altogether control, and at times found themselves compelled to do things which they were advised not to do; and now and then it happened that even then, in the case of the person who seemed to possess all the factors of longevity, death ensued early in life.

Professional Athletes Short-lived.—Dr. Brandreth Symonds said that when he was asked to take part in the discussion he expressed the opinion that the subject was rather a large one, whereupon the chairman had kindly extended him the privilege of nibbling at it here and there. With regard to the effects of athletics upon the expectation of long life, it was notorious that professional athletes were short-lived. In seeking a reason for this he had had opportunity to examine four, and only one of the four showed no abnormality. The others had cardiac hypertrophy, one a little emphysema, one a trace of albumen and sugar in the urine. It was different with amateurs, for they left the field before permanent lesions developed. He had examined eleven good amateurs with reference to the question whether they were desirable subjects to insure, and he had found all but one practically sound. The one who constituted the exception had a narrow chest, thirty inches, and secondary enlargement of the heart as a consequence.

The Influence of Build.—Dr. Oscar H. Rogers thought Dr. Lambert was quite correct in regarding the family history as the most important factor in longevity. In the exceptional cases where longevity in the parents had not been transmitted to the offspring it might, perhaps, be accounted for by moderate extremes in some respects existing in both parents, combining and causing marked extremes in the offspring, The form of body was, he thought, next in importance to family history. A person might not only be too heavy, but his fat might also be accumulated in the abdomen, instead of being evenly distributed.

About Consumption.—Dr. Rogers had once considered the question, what persons might be expected to die of consumption, and on looking through a life insurance list had found that about one-fifth of those dying of consumption gave a family history of that disease. Stated in a different form, about four-fifths of the people who died of consumption in adult life gave no history of this disease in their immediate family. Approximately, seven-tenths of those who had died of consumption were under average weight and build. Very few were of the average weight, and fewer still above it. Gout was of sufficient frequency in England to be considered in the family history by insurance companies, but in this country neither it nor rheumatism was considered of so great importance. After the question of disease in the family and the points previously mentioned, he next laid most stress upon habit. Some persons would train well on five pound dumbbells, others better on ten pound ones, and it was the same with alcohol; one man would be a raving maniac with a single glass of alcoholic drink a day, of which another man might take a half dozen glasses and live to eighty or ninety years. He would, therefore, like to see a little wider latitude given the individual—not every individual—in the use of alcohol.

Dr. Rogers had looked over a list of five thousand deaths, in persons whose lives had been insured, with regard to the cause, and had found that about twenty-five per cent had died of diseases of the lungs, and about ten per cent of these had died of tuberculosis, probably ten per cent of pneumonia, the other five per cent of bronchitis and other affections of the lungs.

Dr. Rogers also said, in passing, that post-graduate instruction in New York and other centers had decidedly raised the standard of rural medical men who made preliminary examinations of those applying for life insurance.

The Mutual Influence of the Different Factors in Longevity.—The chairman asked some questions regarding how far inherited constitution might be modified by environment, the mutual influence of the several factors relating to longevity, and the propriety of considering them in granting life insurance.

In reply Dr. Lambert said he had not gone into details, as it would have required all night. With regard to weight, there were two sources of danger, one in light weight, and a very different one in heavy weight. Light weights, as a rule, developed their diseases before forty, heavy weights after fifty. The rule applied in the selection of recruits for the army was the safest he knew with regard to relative weight and height. One was taking an extra risk in insuring a man who did not weigh two pounds to the inch in height. For instance, if a man measured five feet ten and weighed less than one hundred and forty pounds, his life was an extra risk. Of course there were marked exceptions to this rule. In the same line, if a man's chest did not measure half his height, the risk was great. If both the weight and chest measurement were below the proper proportion compared with the height, the sooner the case was barred out, the better for the insurance company.

His idea with regard to fat men was, that the danger increased in proportion to the size of the belly. He did not regard a stout man as an extra risk if he came of a good family and his flesh was well distributed. But if a man's chest measured 36 and his belly 46 inches, he was more likely to die of fatty degeneration than if the chest measured 38 inches. Such persons usually died of diseases "below the belt." The farther a man was away from the ordinary standard in build, the more critically did he inquire into the family history, his personal habits, whether he took more nourishment than any decent man could burn up, and so on. The difficulty with high living was that a man put nourishment into his stomach faster than his excretory organs could eliminate it. He put into his furnace so much coal that clinkers were sure to form, and he would die of some one of the results of carrying in his blood a lot of stuff which ought to be excreted.

The Danger from Alcohol.—Dr. Lambert thought the danger from alcohol lay less in the alcohol itself than in the fact that the subject was apt to keep his stomach on the grind from morning till night, giving it no time, much less half the time, in which to rest.

Bodily and Head Measurements and other Factors.—Dr. M. Morris continued the discussion with a paper. He had studied the subject of longevity more or less for a good many years, not alone in connection with life insurance, but also as a general practitioner should do. Inherited tendency to longevity was an important factor in treating disease. Persons inheriting short life did not present as good prognosis in disease as those inheriting long life. This was especially true in critical diseases. There was an indefinable something in the human organism, varying in degree and force, termed tenacity of life or natural resistance to disease, by which some persons passed most successfully through serious maladies and injuries, while others without so much natural resistance succumbed. This was every-day experience, especially in surgery. This statement did not, of course, imply that proper treatment had not much to do with the successful result.

In a large proportion of those endowed with tenacity of life the ancestry would also be found long lived. Like in other living organisms, some parts of man's system decayed and perished before others. The vital principle was seen to carry on its active process in one organ and another until each one in turn faded, and the being was unable longer to maintain life. It was not within human ken to describe this vital principle, but by observation it was known that certain conditions would cut it short, yet that it was impossible to prolong it by any means whatever beyond the natural inheritance. Some men were at best endowed with short life, while others, if they obeyed the law, could live a long life.

Is it Possible to Predict the Probable Duration of One's Life?—Having put this question, Dr. Morris said that inherited tendencies, habits of living, occupation, observance of sanitary laws, and residence, all had a direct bearing on the question of probable longevity. Acute diseases, bad habits, excessive indulgences, unfavorable residence, all had a life-shortening influence. In all forms of life we must find some substance in common in which life inhered and upon which life must depend. In plant life there were structures not found in animal life, and in animal life there were substances not found in plant life, but in all forms of life there was a secretory tissue. This was the only substance common to all living things. This also had its lifetime, and when it ceased to exist life became extinct. This secretory tissue was the only kind of substance which was transmitted from the ancestors, and therefore it contained in itself all the ancestral influences which were transmitted. But there were different kinds of secretory tissue and different proportions of each, so that the duration of life was a variable quantity. The different organs of the body were not a unit, but aggregations, and one might die and end the individual's life, while others might have lived on to an advanced age. Yet a short-lived organ might not be essential to general life. A life was always a combination of inherited influences, some one of which might be of a kind to reduce the general inheritance below that of the ancestral stock. Current conditions seldom produced a better result than fairly belonged originally to the individual.

It was not unusual to remark that a person inherited red hair from the mother, or a dark complexion from the father, and so on. Why, then, not inherit the stomach from one parent, the liver from the other, and similarly with other organs? One brother resembled in outward appearance almost entirely the mother, a sister the father; if so without, why not within? A greatgrandfather died of heart disease at seventy-six, a grandfather at seventy-one, a father at sixty-five. A son resembling this father might rightfully infer that he would die still younger of the same disease. But instead of calling it disease, call it the natural life shortened by a weakness in the paternal ancestry. Like caused like.

Can the Constitutional Inheritance or Lifetime of Organs be Discovered by External Appearances?—To this question Dr. Morris answered certainly, in the majority of cases. In the first place, by studying the physiological relations of the organs of the body and their mutual influences; second, by observing the external manifestations; also by family history of longevity. A person whose ancestors were long-lived on both sides would, as a rule, be both healthy and long-lived, and able to endure much hardship and grave maladies. On the other hand, those who inherited short life could not by any prescribed system of living protract their short life inheritance. General average law did not form a basis for estimating individual longevity. Lucas had stated that the average life depended upon locality, hygiene, and civilization. But individual longevity was entirely exempt from these conditions. Everything tended to show that long life was the result of the initial principle of vitality which privileged individuals had received at their birth, and this was so deeply imprinted in their nature as to make itself apparent in every part of their organism. It was not the habit of the man who was excitable and always in a hurry which made his life a greater risk than that of a calm, philosophical person; it was rather the inherited quality which led to the difference in behavior and, in the case of the philosophical person, gave long life.

External Indications.—There were certain external indications which would give a fair idea of long and short life. It was not in one trait, but in the entire make-up of the individual who stood before the examiner. There were the color, the motions, the measurements, including size of head, which was one of the most certain indications of long or short life, for in the brain lay the great center of power. A person with a head whose diameter at the thin portion of the temporal bones measured five and a half to six inches was almost sure to give a longevity on the father's side of seventy to ninety years or over. If the head measured in front from the external auditory canal to the nasofrontal suture as much as four and three-fourths or five inches, we might be almost sure of long life on the maternal side. A beard which was darker or redder than the hair indicated inheritance from the paternal side; if it were lighter than the hair, the inheritance was probably from the maternal side. The length of the chest, its proportion to the circumference to the height of the individual, and other measurements, were important.

Emphysema and Starvation.—The chairman, Dr. Quimby, quite agreed with Dr. Morris as to the importance of inheritance, but he had been struck with the powerful influence which habit or conditions of life had in the production of certain diseases. He referred especially to emphysema, which he said he had encountered with startling frequency in the dispensaries, and had come to the conclusion that it was due to bad food or insufficient nourishment among poor people. He had found the emphysematous chest repeatedly in persons only twenty-five years of age, or even younger, who visited dispensaries. In striking contrast with this experience, he had not in ten years examined a musician who had emphysema.—*Medical Record.*

Possibilities of Reparative Surgery.

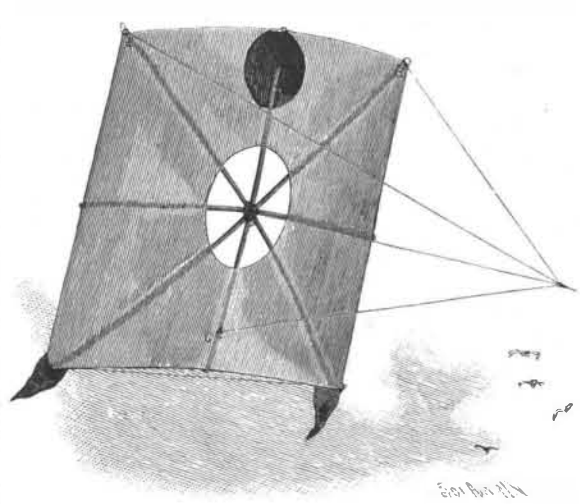
Surgical literature, especially in recent years, contains records of numerous cases in which divided tendons, veins and nerves have been sutured, and in which small members of the body, such as the fingers or the end of the nose, have been successfully reunited. In an article on the surgery of the hand, a liberal abstract of which appears on another page of this journal, Dr. Abbe foreshadows what may become a reality in the future—the restoration of completely severed major parts of the body. The possibility of accomplishing this depends essentially upon our ability to restore the arterial continuity and supply sufficient nourishment to the severed extremity. Experiments in this direction have been made by Dr. Abbe on animals, and the results obtained are of great interest. After cutting across the femorals in a dog he inserted smooth sterilized glass tubes, slightly constricted to an hourglass shape, tied each end of the vessel over the tube by fine silk thread, and then brought the thread ends together. Primary union took place and the limb was as well nourished as ever; but in order to determine whether this was not due to collateral circulation Dr. Abbe cut out one of the tubes and found the lower end of the vessel occluded by slow endarteritis. To eliminate the element of collateral circulation he tied into the aorta of a cat an inch of very thin glass tube sterilized by boiling and filled with water before inserting to prevent air emboli. This animal also recovered perfectly. A still more radical procedure was then practiced. After dissecting out the brachial artery and vein near the axilla of a dog's forelimb, and holding these apart, he amputated the limb through the shoulder muscles and sawed through the bone, leaving the limb attached only by the vessels. He then sutured the bone with silver wire, the nerves with fine silk, and each muscle by itself, making a separate series of continuous suturing of the fascia lata and skin. Perfect union and restoration of function also took place in this instance. This experiment demonstrates that a limb will survive division of all its structures if an artery be left; and further the author points out that if an arterial supply can be restored to a completely amputated limb, *that* limb also may be grafted back to its original or a corresponding stump. Should Dr. Abbe's investigations—as yet incomplete—show that it is possible to do this in animals, an important contribution will have been made to the subject of reparative surgery. The tissues of animals, however, possess so much higher reparative power than those of human beings, that it is difficult to predict the possibilities of this *fin de siecle* method of grafting.—*International Journal of Surgery.*

Snow Crystals.

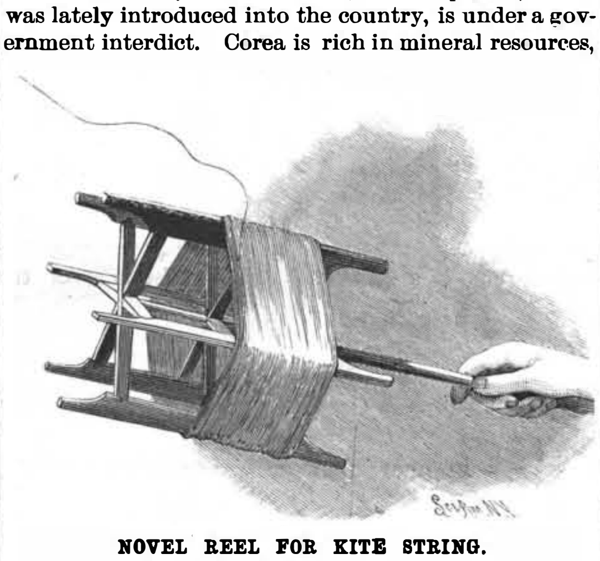
Snow crystals are now studied with so much more accuracy from microphotographs than from naked eye observations that physicists and meteorologists no longer depend upon the old method. Prof. G. Hellmann, in his recent valuable work, "Schnee-krystalle," proposes that the crystals be classified as columnar and tabular, subdividing the former class into prisms and pyramids, the latter into stars, plates, and a combination of both.

THE COLUMBIAN EXPOSITION—COREAN EXHIBITS.

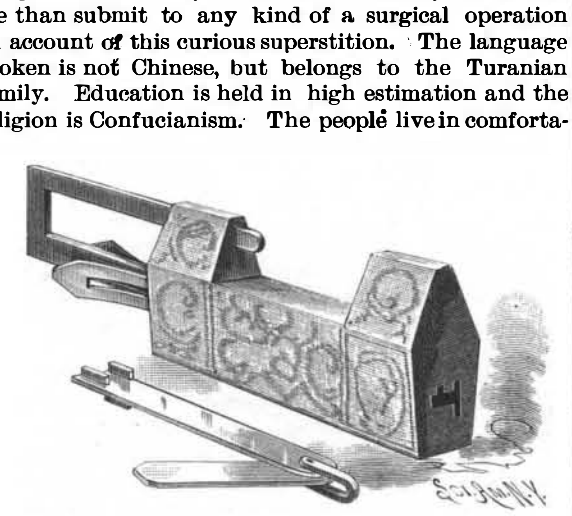
Corea is a kingdom of Eastern Asia, and its territory is chiefly included in the peninsula lying between the Yellow Sea and the Sea of Japan. The area is about 80,000 square miles, or about two and one-half times the size of Scotland. The population of Corea is estimated at about 12,000,000 and the capital, Seoul, has 250,000 inhabitants. The country is mountainous and is well furnished with rivers. The temperature, though more equable than the surrounding country, is higher in winter and lower in summer than under the same latitudes in Europe. Rice, rye, wheat, millet, tobacco, cotton and hemp are cultivated, but the potato, which was lately introduced into the country, is under a government interdict. Corea is rich in mineral resources, but the mines are not properly worked. The King of Corea is a vassal of the Chinese empire, but at the same time is an absolute monarch within his own country. Some of the honors which he receives are very curious. To touch the person of the king with a weapon of iron is high treason, and a king will rather die than submit to any kind of a surgical operation on account of this curious superstition. The language spoken is not Chinese, but belongs to the Turanian family. Education is held in high estimation and the religion is Confucianism. The people live in comfortable tile-roofed houses heated by flues. Though Corea has no railroad as yet, it has electric lights, steamship and telegraph lines.



A COREAN KITE.



NOVEL REEL FOR KITE STRING.



A CURIOUS COREAN LOCK.

In the history of commerce Corea occupies a curious position, treaties having been only in force since 1882. The exhibit of Corea at Chicago marks a new epoch in the relations of Corea with the rest of the world. It is to be hoped that the insular position of Corea will be modified by contact with other nations, as the people of this strange country have many virtues and excellences hardly to be expected in people of their state of civilization. We illustrate several objects which were exhibited at the Fair. Kite flying is an amusement which is almost universal. The Chinese, Japanese, and Mexicans excel in kite making and flying, and the Coreans are certainly not far behind them. The kite shown in the cut is of moderate size and is made of sticks covered with varnished paper. It will be noticed that at top and bottom the sticks are bent by strings, so that the part of the kite which is exposed to the wind is convex. One peculiarity of the Corean kite is a hole in the center. At the point where the sticks meet in the center the string, which is usually colored, is attached. Three guy lines of equal length steady the kite, and by varying their point of attachment almost any angle can be produced and the kite adapted to all winds. The kites are decorated with paint, the ball being the most common object represented. We also illustrate a reel which is used in kite flying. This reel is about seven inches in diameter and is well made. It turns freely on a pointed stick which is thrust into the ground. Like the Mexicans, the Coreans are very fond of kite fighting. They oil the string near the kite and rub on glass in powder. In a kite battle each person tries to drag his glass-covered string over an unprotected portion of his adversary's string, thus cutting the cord and allowing the kite to blow away.

A curious Corean lock is shown in our third illustration. The lock is after the style of a padlock, and is made of brass. The lock is shown open. The key and the internal mechanism of the lock are very primitive. The two lugs on the upper part of the key press the two springs together and allow the bolt to move. The security of the lock depends upon the springs, which snap into place as soon as they have passed inside, thus forming a V inside the case, in a similar manner as they form a V outside, as shown. Many of the other articles on exhibition showed that the Coreans are handicraftsmen of no mean order, though a lack of proper instruction in regard to mechanical contrivances is shown.

Want of Metric Weights and Measures a Hindrance to Foreign Trade.

In the last published British Foreign Office report (No. 1,300) on the trade, etc., of Bulgaria, it is stated that would-be sellers in England do sometimes go so far as to send out catalogues in French or some other foreign language, but that even then they "persist in retaining the intricate English standards of weights and measures." It is added: The metric system is the one now employed throughout Bulgaria, and it is useless for English manufacturers—especially of machinery and hardware—to expect that their potential foreign customers will give themselves the trouble of learning our avoirdupois and dimension tables in order to be able to puzzle out quarters, pounds and ounces, yards and inches, gallons, pints, etc., into their metric equivalent.

Regarding Peru a correspondent writes complaining of the inconvenience he suffers when consigning machinery. Shipping specifications have to be sent out in metric weights and measures, and if there are any errors, his customers are liable to a fine. This means that he has to make out the specifications twice over, first in English and then in metric weights and measures. He, therefore, urges, and not unreasonably, that the metric system should be adopted officially in England. This would doubtless lead to its being adopted by all shipowners and carriers, and one more step in the direction of an international system of weights would be taken. Great Britain is almost the only civilized country of first rank which is blind to the interests at stake in this question, and it is high time that a public inquiry should be instituted.

Pneumatic Tubes in Chicago.

A pneumatic tube service between the offices of the various newspapers and news associations of Chicago has just been put in operation. Twenty-nine conduits were laid under Clark Street, beginning at Jackson and running north, and branching off at cross streets leading to their respective destinations. These conduits consist of seamless drawn brass tubes 2⅞ inches in diameter, laid in square vitrified clay pipes, surrounded by about 10 inches of Portland cement. In this way all dampness is avoided. In sending the carriers through these tubes only the pressure of the atmosphere will be used, the necessary vacuum in the receiving end being produced by an ejector. The carrier is made of flexible leather, with an inner spiral frame to keep it in shape, and a band of felt around each end to make it comparatively air tight. It is 2¾ inches in diameter and 8 inches long. This system connects the City Press Association and the Western Union Telegraph offices, at Jackson and Clark Streets, with the offices of the different newspapers, national and international news agencies and the central police station. About one minute is required for a carrier to traverse the longest line. Several years ago the principal newspaper offices in this city were connected with the Western Union Telegraph office by pneumatic tubes.