Does Death Sting?

Dr. G. L. Beardsley, in the *Medical and Surgical Reporter*, concludes that the dread of dying is quite as intense as the instinct of self-preservation. Indeed, it is not improbable, adds the doctor, that numbers would care less about living were the modes of leaving the world a theme for happy contemplation, or an innovation to the routine of plodding that was agreeable. One is remarkably exempt from the crime of hasty induction if he affirms that there is no sane or healthy mortal who anticipates his extinction with any degree of pleasure. The function of dying is absolutely vegetative—we fall to pieces like a flower. This very fact, that the process is chemical, confirms us in the conclusion that the final "throe" is as painless as the inconvenience is nothing to the fœtal pilgrim when he touches on daylight. A moment's examination of the way we are to die will show marks of goodness in our "taking off." The degree of sensibility is proportioned to the integrity of the tissues. An inflammation heightens it; age depreciates it. Any defect in nutrition disturbs the comfort of the individual until the carbonic acid generated in the devitalization of the blood becomes fixed in the cells or is no longer displaced. The sensory ganglia everywhere part with their irritability by virtue of this poison, and cease to conduct currents. The criteria of death are being satisfied, and the process is consummated when this extinction of sensibility prevails at the ultimate filaments. During the progress of this dissolution of the nerve force, this creeping on of the numbness of death, the individual is rapidly passing into a condition of repose, and instead of torture or pangs, a degree of self-satisfaction oft approaching to enthusiasm is realized. The sensations peculiar to the therapeutical operation of opium, hashish, ether, etc., are not improbably akin to the mental activities of the dying. Barring the hallucinations experienced in the stupor as it gains on the subject, the moribund is familiar with naught that borders on suffering. This carbonic acid has poisoned or narcotized the several ganglia, and reflex productions are interdicted. A consummate analgesia prevails. In short, the notion of pain is forbidden the instant that any stimulus fails to excite a response. The condition to this irritability is that the nerve center and track be sound. If this vigor vanishes, reflex phenomena are at an end, and suffering, physiologically speaking, is impossible, because of the arrest of the function of the sympathetic.

Fortunately, for a wholesome study of one's demise, there are assurances abundant, from vivisection, the testimony of those who have been restored to consciousness, and the affirmations of the dying, that there is no physical recoil from death. Burney tried hard to resist the efforts made to resuscitate him from drowning, so bewitched was he by his prolonged slumber. Dr. Solander, the traveler, was so delighted with the sensations of excessive cold, that he was the first to lie down in the snow to realize the luxury of such a death. Wm. Hunter was sorry he was not able to "write how easy and delightful it is to die." Infants die as serenely as they breathe, and not a few among the advanced in years treat death as a friend to their infirmities. Hanging is naturally rated, next to crucifixion, a most distressing procedure. But it is reported of those who have been saved from strangulation, that the agony promised to be brief, and was rapidly replaced by hallucinations of a fascinating variety.

One would fain believe that the kind God who suffered us to feel no sigh in coming would take no delight in turning our farewell into writhing—nay, he does not quit us at the last. He is our greatest benefactor in allowing us to sleep out of weariness. Death is, assuredly, no tax collector; its "jaws" are not the clutches of an assailant; there is no "victory to the grave;" the ghost speeds away from us as it entered, with no ruffle. The sense of death, as Shakespeare has it, is most in apprehension. It is the fear of the lonely night, not the throes of nature, that makes the leaving painful.

Medical Herbs.

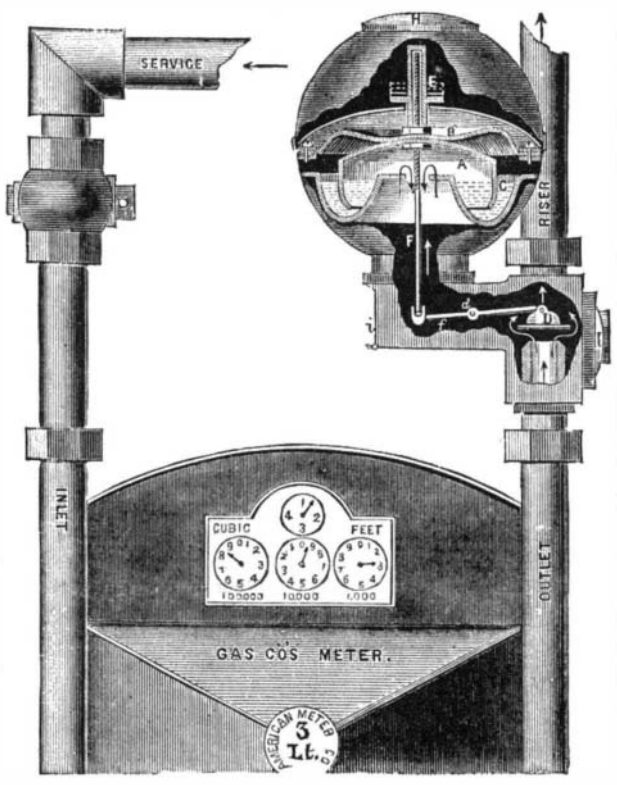
The indigenous plants of Great Britain are too much neglected in the present age, for persons are apt to run after all that is rare or novel in the form of medicine in preference to cultivating our native herbs, so many of which are rich in curative properties. The balm and the dandelion, for instance, are little valued, yet the first is an admirable tonic, and the other a first-rate liver medicine. The balm is, strictly speaking, a native of the south of Europe, but it has been grown in our gardens from time immemorial, and the first record I can discover of its being used medicinally rests with the Arabs, who are said to have taken it to strengthen the nerves; but I can remember the time when "balm tea" was drunk by the laboring classes in South Wales almost as freely as tea is now taken by English cottagers, and most certainly hysteria was at that period a disease unknown among the working classes. Not so now, alas!

Dandelion is admitted into our British Pharmacopœia under the name of Taraxacum, and regularly prescribed in diseases of the liver and spleen; but the poor people were at one time accustomed to make a decoction with the roots, which answered nearly as well as the chemically prepared extract, and the leaves when blanched are taken by the French in salads. It is likewise a valuable antiscorbutic. People put great faith in the doctrine of signatures during the fourteenth and fifteenth centuries, but it is now nearly exploded. It was based upon the following hypothesis, that every natural production indicates by some obvious external mark the diseases in which it is efficacious; and for my own part I really believe that there is a great deal of truth in the idea that not only the colors of a flower, but various other marks on leaves, stems, or roots are typical of their medicinal properties; for example, the spotted lungwort possesses healing powers in consumption, the scarlet poppy has been used with good effect in erysipelas, and the asarabacca, provincially called the foal's foot, or wild ginger, with its curious ear-shaped leaf, was formerly an unfailing remedy for all the pains that affect that organ.—*Science Monthly.*

GAS PRESSURE MODERATOR.

March 18, 1880, we had occasion to notice this invention. The inventor says he took the advice given in our hand book to inventors, entitled "Hold the Fort," to retain the controlling interest in his patent; and that from small beginning thousands of these machines have been manufactured and are now in use.

The manner in which this pressure regulator operates will be readily understood by reference to the illustration. The gas is received from the street through the service pipe, and passes into the meter at its inlet; there it is measured, and passing up into the moderator (the arrows indicate the course of the gas), fills the space under the float, A. When one burner is open this float drops and opens the valve, D, and lets out of the gas meter just enough gas for that one, at a rate of pressure from which all the light is derived from the gas, and so on for every burner that is opened. If one burner is closed, the float, A, rises, causes the valve, D, to close also, and so on for every burner that is closed. If the pressure from the gas works increases while one or more burners are in use, the valve, D, drops and retards the flow of gas. If the pressure of gas goes down from the works, the valve, D, opens and lets out more gas, which is not forced to the burner or burners, but is admitted through the meter just as the demand is made.



DE PALOS' GAS PRESSURE MODERATOR.

Those who have used this invention furnish some striking testimonials of its efficiency as a gas saver. One large New York house, whose consumption formerly amounted to $6,000 per annum, claim to have reduced the same by the use of this moderator to $4,000 per annum; and the inventor estimates 33⅓ per cent as a fair average of the reduction of gas bills by its use. Among other things, which is not a very small matter, it accomplishes a more perfect combustion of the gas, thus preventing the smoking and sooting of the ceilings, due to imperfect combustion. Also, where "water gas" is used, it reduces the amount of carbonic oxide. This water gas is now a large proportion of the production in this and many other cities, although the companies usually try to keep it a secret.

The inventor says: "The consumer who neglects to place this invention on his meter loses every three to six months a sum of money equal to the cost of one of these instruments; that is to say, he pays the gas company for the value of the gas wasted in his house." About September 21, 1881, and up to November 27, 1883, this instrument was known as "the Owl Gas Pressure Moderator," but by legal proceedings the name was changed.

The inventor is Mr. James S. De Palos, No. 822 Broadway, New York.

Manufacture of Etching Ink.

According to Muller, a liquid for etching on glass has recently been introduced into commerce, and can be used with an ordinary pen. It consists of hydrofluoric acid, ammonium fluoride, and oxalic acid, and is thickened with barium sulphate. A better ink is obtained as follows: Equal parts of the double hydrogen ammonium fluoride and dried precipitated barium sulphate are ground together in a porcelain mortar. The mixture is then treated in a platinum, lead, or gutta-percha dish with fuming hydrofluoric acid, until the latter ceases to react.—*Dingl. Polyt.*

The International Electrical Exposition, Philadelphia.

(FIFTH PAPER.)

These are the last days of the Exposition, and, as one succeeds another, it brings with it an increased number of visitors. Barring Philadelphians, there may safely be said to be very few, if any, visitors who come here out of pure curiosity. The observations of the officers of the Franklin Institute, favorably situated to learn the facts, do much to prove that those visitors who come from a distance are, for the most part, actuated by either commercial or scientific motives. It is not strange, therefore, that, despite the experience at most exhibitions, there should here be a maximum amount of serious attention to the exhibits and a minimum amount of studied inobservance. The good nature of the exhibitors and their employes seems to have no bounds, and rare are the occasions when they address themselves to the inappreciative or those wholly unfamiliar with applied science.

Of the multitude which daily pours through the doors, the majority appears to be more or less interested in comparing the various electric lighting systems. They seem to derive much pleasure though little profit from this, as the various companies, though unsparing of so-called statements of what their several apparatus are capable of, will not permit, save in a few exceptional cases, tests to be made on the premises.

Those desirous of buying an electric lighting plant with an idea of selling light are, naturally enough, as much interested in knowing the amount of current used and the cost of generating it, as they are in the intensity of the light and the arrangement of the apparatus. As to the arc light urban as well as suburban capitalists and projectors have learned ere this how elusive are its promises of profit, save when installed under peculiarly favorable conditions.

The services of the diplomat as well as those of the electrician seem to be required in disposing of arc light plant, and no little ingenuity is shown at the headquarters of the various arc light companies in explaining why, there being so much profit in selling the light, they should so strictly confine their efforts toward selling the plant.

It is something of a disappointment that the scheme of charging secondary batteries placed in dwellings and offices from the arc light wires running through the streets has not been practically illustrated, so that it could be seen in all its workings.

It is an ingenious project, and, if it could be publicly shown that the batteries can be economically charged by day by means of the same electric mains which at night furnish the current for the arc lights in the streets, it would prove a dangerous rival to those systems in which the lights are fed directly from a central station. For the steam engine is, at best, uncertain, and like all mechanisms subject to accidents; and though this may be foreseen and provided for through the agency of auxiliary engines, the provision does but add to the cost of the plant.

Many of the electricians gathered here at the Exposition take an absorbing interest in the so-called "underground problem." Opinion seems very equally divided as to the practicability of the scheme. To all appearance, for every electrician interested in an electrical company, who calls it impracticable, his fellow may be found holding the contrary opinion, and able to maintain it with equally convincing proofs. This does much to sustain a learned jurist, who has defined an expert as one who can testify on either side of a case with equal facility.

Among those who believe the wires may be efficiently and economically buried is Prof. Preece, the eminent English electrician. At a recent meeting of the telephone managers a paper was read by an employe of the American Bell Telephone Company, whose duty it is to keep the lines in running order. The object of the paper was to show that telephone lines, at least, could not be efficiently operated underground. At the conclusion of the reading Professor Preece took the writer of the paper severely to task for the incorrectness of his conclusions, and remarked that if that was "the result of his investigations he must have sadly neglected his business." In support of that part of Professor Preece's assertion regarding underground wires which attributes to them efficiency of working, there are some experiments making here in the Exposition building. This underground line extends from the Exposition building in West Philadelphia to the Pennsylvania Railway station in Kensington, a distance, when the route taken by the wire is considered, of more than eight miles.

It must be said that the results had with the telephone wires—the most sensitive to induction and retardation of all the wires that it is proposed to bury—are more than encouraging. Indeed, it is very doubtful—so say telephone experts who are watching the experiments—if an overhead telephone line could be operated more satisfactorily, even under the most favorable conditions.

Mr. Frempt, the superintendent of the underground company whose conduit and system is being used, is very anxious to have a comparative trial between his line and an overhead line. While officially inviting such a test, he begged the telephone people to appoint a day of trial when the conditions of weather should be most favorable to the overhead system.

This experimental underground line does something toward the solution of the important problem. But it should be remembered that it is an experimental line. Whether it would remain in the excellent condition it i

now in for an extended period, time only can prove. The question of cost, too, should not be forgotten, for in importance it is second only to that of efficiency, and it is improbable that an expensive system of underground conduits would ever be adopted or placed in general use for this, if for no other reason—that it would result in raising the rates for service; and, as we know, the public is looking for a reduction in the rates, that an increase would not be tolerated.

The system of underground conduits now in use in Chicago, as exhibited in the Exposition, does not differ essentially from those systems which have already been described in these columns. The section now in successful operation in Chicago consists of eleven miles of conduit, containing nearly two hundred miles of wire, and was built, it is said, in four months. The manager of this system says that the company has one main office and six branch offices, with facilities for opening many others. The Postal Company, he says, has a line parallel to his underground, wherein is laid a conduit containing about one hundred and eighty miles of wire. So far this year, he says, the city of Chicago has buried one hundred miles of wire, and proposes at an early day to have every wire in the city, whether light, telephone, or telegraph, under ground.

A little apparatus by which a dwelling house or office may be kept at a uniform temperature is noticeable, not by reason of novelty, which it doesn't possess, but because of recent improvements which render it fairly reliable. Those who have ever tried to regulate a furnace fire are aware how much time it requires and how unsatisfactory are the results. The house being too warm, the dampers are adjusted and the windows opened. As a result the temperature, which before was nearly tropical, falls too low for comfort. The electric regulator is intended to look after the furnace fire, or rather its temperature, and by preventing it from becoming too hot effects a not inconsiderable saving of fuel. It consists of a thermostat, a clock, an electric jar, and a valve. The thermostat is hung up in any of the living rooms; the clockwork and valve being placed on a branch of the smoke-pipe of the furnace. When the instrument is properly set at a certain temperature, the draught will be checked when the heat rises above it, and opened again when it descends below it. It is exceedingly sensitive and does not easily get out of order.

In the philosophical department is shown a new electro-dynamometer for the measurement of very feeble alternate currents. It differs from the common type of electro-dynamometers, because of the suppression of the movable solenoid and the absence of the intricate scheme for suspension which goes with it. An iron rod performs the same office as the movable solenoid. This iron rod is readily poised; a thread of very weak torsion giving marked satisfaction. The apparatus is both sensitive and quick, for the movable portions have little or no weight.

During a recent test the blowing of a horn attached to a telephone so violently agitated it that the deflection of the group of wires was too great to be accurately observed.

An interesting feature of the present Exposition is the presence of large quantities of historical apparatus. It is not enough that the student and the mechanician should have before him the newest form of apparatus, but also that he should see the various mechanisms of a like nature which preceded it. This enables him to follow the various improvements from the earliest application of a newly discovered law through all the various stages on the road to perfection; to observe how obstacle after obstable is removed; how one original idea suggests another, until finally that which at first was a cumbersome, intricate piece of machinery of but imperfect operation is finally trimmed down and remodeled into a smooth-working apparatus of few parts and efficient action.

One of the most interesting of these crude apparatus is shown among the foreign exhibits. It is a focusing electric lamp of the arc type made by Dubosc of Paris, and called the Foucault regulator. This lamp is in many respects similar to that brought hither in 1874 by Prof. Tyndall, and exhibited by him in his lectures. The lamp shown by Tyndall was intricate in the extreme, and of such costly construction that it was fit for little else but exhibition during a laboratory lecture. The lamp shown in the present Exposition constitutes what might be called an improvement on this. Clockwork is make to operate the carbons, as in many of the arc lights now in general use. Through the agency of an electro-magnet with coils forming part of the circuit, that feeds the lamp, the carbons, when the current is too strong, are made to approach each other. The armature falls when the current is not strong enough, and this reverses the gearing of the clockwork mechanism, and they again draw apart, the one from the other. As said before, such lamps are intended to show the several ingenious contrivances which led to the present type of arc lamp rather than as models for a general system for practical illumination.

Throughout all the foreign section no lamps show such constant and well conceived automatic action as some arc lamps of the Gerard pattern. In these, levers of delicate construction are acted upon by two springs influenced in turn by an electro-magnet. Each of two levers has pins affixed, and these, when inclined to a certain degree, fiamly grasp the upper carbon. The levers, influenced by the electro-magnet while in shunt circuit, permit the upper carbon to fall from its grasp upon the lower carbon. The shunt magnet, as soon as the circuit is made again, weakens its force, the levers are put back in the same condition as before by the action of the springs and clasp the upper carbon, elevating it always to a sixteenth of an inch and forming the arc.

Among the German exhibits there is a curious arc lamp having the lower or negative carbon floating in a tube of mercury. As long as the current is powerful enough, the lower carbon is steadied by a lever, while at the same time pressing the upper carbon upward to the required height. The weakening or lessening of the current permits the upper carbon to fall by the relaxation of the lever.

To those interested in arc lighting there is nothing in the Exposition which can prove so interesting as the specimens of zircon shown in all its peculiar conditions. It is well known that the necessity for constantly replacing the exhausted carbons in the arc lamps makes the system both inconvenient and expensive. Now this zircon, it is claimed, will, when combined with carbon and other elements, hold the electric current indefinitely without showing any diminution. This shows it to be far harder than platinum or iridium, for neither of these will stand such a test, though iridium and platinum are sometimes used in place of one of the carbons in arc lamps. Zircon has not thus far been found in large quantities outside of Henderson County, in the western part of North Carolina. When the specimens were first brought to light, it was thought of little or no value as a metal, or rather the use for which nature had designed it was not yet discovered. After some experiments had been made, however, zircon gave evidence of possessing unusual qualities in withstanding intense heat, and specimens were sent to the Smithsonian Institution, in Washington, to be tested. Here it was shown that the newly discovered mineral would hold a powerful electric current without fusing, and that, since there is no combustion during the passage of the currents, there was no necessity for a vacuum lamp, as in the incandescence systems the ordinary arc lamp of a much simpler form being all required.

It has for some time been promised that a battery by which light could be changed into electricity would be shown among the foreign exhibits, and tests made before those interested. Up to last week, however, this battery had not arrived, and no little disappointment has been felt by those interested in such experiments. As explained, the chemical constituent of sunlight is made to furnish the power. It has been shown, however, that heat waves will so influence a thermo-pile as to generate a current. The battery itself is said to be made of glass, having within a porous cell filled with mercury. There is also a solution of table salt and sulphate of copper, two electrodes, one of them being made of sulphide of silver and the other of platinum. Near the main entrance of the hall there is displayed an improved system of electrical matting, through the instrumentality of which the unsuspecting burglar, upon entering a dwelling or any room thereof, is made to announce his arrival by setting a gong a-going. Indeed, it will when in good working order do more than sound an alarm. It will light the gas and call the servants. The matting itself is invisible, being placed under the carpet. It is composed of thin strips of poplar fastened to muslin. On one side there are fine springs fastened through the matting with the wires that connect the bell and battery. Curiously enough, the removal of the foot, after once treading upon the matting, does not stop the alarm, and even cutting the wires will not serve to check it.

A new and unique system of railway danger signals is to be seen in the Exposition, and, although it has not, so far as can be learned, been sufficiently tried to prove its efficiently, it merits by reason of its novelty, some little attention. In the system described in these columns two weeks ago, the danger signals along the line were made to confront the engineer whenever he approached another train on the same track; the rails being used to transmit the current. In the railway cab electric signal system, the engineer, if blind as a bat, must needs be aware of danger, because the alarm is made to sound from his own engine. A praiseworthy feature of this system, as well as of that before described, is the fact that the warning signal is not a result of force, but rather of the absence of force, so that a failure of the parts to work does not lead to deception. In other words, the normal condition of the signal is at "danger," and only when the apparatus is working smoothly, and consequently when the track is clear, can the signal whistle be prevented from sounding in the ears of the engineer. The whistle or gong is made to sound in the cab of the locomotive by means of the breaking or opening of a normally closed electric circuit.

This necessitates, of course, the presence upon the locomotive of an electric generator, which is coupled to a small motor fed from the boiler of the locomotive. The operation of the apparatus is thus explained: The two poles of the dynamo terminate by means of wires, one to the body of the locomotive and one to the frame of the tender; both having metallic contact with the rails by means of their wheels. These two points or terminals formed by the wheels are insulated from each other, so that, when on the rail, the wheels of the locomotive and the wheels of the tender are only connected together electrically by means of the rail. If the tender has a wooden frame, the insulation is, of course, complete, but if the frame is of iron the draw bar should be insulated. This gives a closed circuit in action by the aid of dynamo, locomotive, tender, and rail.

There is a magnet in the cab holding an armature, and the circuit passes through it. The opening or interrupting of this closed circuit results in making the armature forsake its magnet, and this by means of the ordinary lever action sets a whistle or gong a-going. The warning sounds continue until the engineer replaces the armature to its magnet, which is again held by the current. The current is interrupted and the circuit opened by insulating two abutting rails, the one from the other. Hence when the wheel of the locomotive is on one rail and that of the tender upon the other, the insulation between the rails causes the circuit between the wheels to be interrupted; the armature leaves its magnet, and the danger signal is sounded. The insulation of the two parallel rails is of the same character, and the circuit is cut for the wheels on either side. The control and working of the signals is thus described:

From two insulated abutting rails, separate wires are led, to join which would destroy their insulated condition. These wires are led to any given distance for the purpose of signaling. They are made to terminate at a switch, a drawbridge, a station, at blocks, or any other points from which a locomotive may be signaled or which a locomotive may signal.

The closing of a switch closes the wires; if opened, they are opened. When the insulated joints of the wires interrupt the current through the rail from the locomotive to the tender, the current must follow the wires leading from the two rails. For example, the two wires being closed at a distant signaling point, the circuit in the locomotive will also be closed when passing the insulated point where the rail is joined by the wires, while, if the wires are open at a distant signaling point, the circuit in the same position on the locomotive will be opened, and as a result the warning signal will be sounded as the insulated joints are crossed. Hence, as long as no sound comes from the danger signal the track is clear.

The Telephone Suit.

The lawyers concluded their arguments in the great suit of the American Bell against the People's Telephone Company on October 2, when Judge Wallace, as is usual in such cases, took the papers and reserved his decision, which may, according to custom, not be handed down for one month or three months. The opinion of the court in such cases usually covers the leading points of the law and evidence, as it is only on this and the complete record that the cause can be appealed to the United States Supreme Court. Although the Drawbaugh people had to show priority of invention over Bell on their own account, or antecedent invention and public knowledge thereof as from any other inventor, they seemed to have confined themselves in the proofs almost entirely to Drawbaugh's inventions, without introducing evidence as to the work of other investigators in this line. The great elaboration with which the case was prepared for trial, however, precludes any supposition that this course might have been followed through inadvertence. Of the great array of counsel engaged, only four took part in the presentation of the case to the court—Messrs. J. J. Storrow and E. N. Dickerson for the Bell Company, and ex-Judge Lysander Hill with Senator Edmunds for the People's Company.

The New York and Brooklyn Bridge Extension.

In our issue of April 12, 1884, we described and illustrated the proposed improvement at the New York terminus of the East River Bridge, by which increased facilities would be obtained for switching the cars. The improvement contemplated consisted of an extension of the tracks across Chatham and Centre Streets, making an entrance for car passengers on the west side of Centre Street, and means of making more ready connection between the bridge and the elevated railway. The great want of such improved facilities has been apparent for many months, and yet the work had hardly been commenced before it was stopped by the refusal of the New York city authorities to allow the necessary street opening. Judge Lawrence, in the Supreme Court, has now decided, however, that the Bridge Trustees have the right to proceed, and an immediate commencement of the work is promised. The arrangements for carrying out the original plan have been so thoroughly matured that it is thought the extension may be completed by the middle of the winter.

The Mosquito as a Yellow Fever Vaccinator.

The editor of the St. Louis *Courier of Medicine* gives an account of the studies of Dr. Carlos Finlay (*Chronica Medico Quirurgica de la Habana*) with reference to mosquitoes and yellow fever. Dr. Finlay believes that he has demonstrated that yellow fever is inoculable by the sting of the Cuban day-mosquito during the third, fourth, fifth, and sixth days of its evolution, but not during the first two days nor after the sixth, no matter what be the severity of the symptoms at those periods. The duration of incubation offers the same variations in the inoculated as in the natural disease, in either case varying from five to twenty-four days. The duration and intensity of the fever produced by inoculation by the mosquito appear to be in proportion to the number of punctures and the quantity of inoculable matter retained by the insect's sting. The inoculation by one or two punctures in no case produced any other morbid phenomena than those of benign natural yellow fever. Dr. Finlay thinks that the results already obtained warrant the assertion that the inoculation of yellow fever by one or two mosquito bites is a plausible means of imparting, without peril, immunity aganst the severe forms of the disease to which those are exposed who well in an infected district.