

INFANTILE PARALYSIS HAS LONG BEEN A PUZZLE TO SCIENTISTS

Disease Which Has Collected Awful Toll of Children Is Caused by Minute Organism That Attacks the Spinal Cord and May Turn a Healthy Baby into a Cripple Over Night—Picks Strong and Well Children in Preference to the Weak.

New York.—The condition known as infantile paralysis is the result of an attack by an organism or minute parasite on the contents of the spinal cord, into which it makes its way. The spinal cord becomes filled with blood and the sensory and motor cells, as they are called, become disorganized and broken. A healthy baby may be turned into a cripple over night by the disease, which for a long time baffled the most expert skill in therapeutics.

Dr. Simon Flexner, head of the Rockefeller Institute, and the man whose discoveries in connection with the disease have given him an international reputation, declares, reports the New York Times, that, according to all records, infantile paralysis seems "to pick the strong and well children in preference to the weak. Vigorous health seems to be no protection against the disease."

"The infectious agent enters the body chiefly, if not exclusively, through the mucous membranes of the nose and throat," he says. "Polio-myelitis, or infantile paralysis, affects chiefly, but not exclusively, young persons; it may and not infrequently does affect adults and no age is absolutely free of danger of infection."

Doctor Flexner appeared before a meeting of physicians in Brooklyn and explained to them how the disease could be contracted.

"The virus of infantile paralysis exists in the secretions of the nose and throat and in the intestines," he said. "Hence the mode of spread may be by kissing, coughing, and sneezing, which carry the secretions of the nose and throat from one person who may be infected to other persons."

"Since the disease attacks by preference young children and infants whose nasal and mouth secretions are wiped away by mother or nurse, the fingers of these persons readily become contaminated. The case of other children by persons with contaminated fingers may, therefore, lead to the conveying of the infectious micro-organism indirectly from the sick to the healthy. This danger also exists in connection with vendors of food which is eaten uncooked. The existence of cases of infantile paralysis in the homes of vendors of food is, therefore, a perpetual source of danger. Dissemination can be made by means of house flies.

As to Treatment.
"Treatment involves isolation of the acutely ill, proper care and destruction of contaminated discharges, supervision of persons in contact with the ill and of all vendors of food, exclusion of all flies, and general sanitary control of the personnel and habitations of families in which the disease exists.

"No age is absolutely free of danger of infection, although infantile paralysis affects chiefly young persons. It not infrequently affects adults. Moreover, as indicated, the disease is one that can be communicated by healthy persons who have been in contact with the sick, but who are themselves well."

Reports of clinical cases indicate that the onset of the disease is likely to be insidious. Parents paying little heed to slight spasms in their children are in due time shocked by the slow withering of limbs and the beginning of a state which in many instances is indistinguishable from physical helplessness. Then, when it is too late, the question of contagion is raised. On this last point, Doctor Flexner has written:

Of Infectious Origin.
The idea of contagion in respect to epidemic poliomyelitis is not a new one, but appeared in the literature of more than a quarter of a century ago, and of late has been frequently invoked. The clinical course of the disease indicated an infectious origin, but up to very recent times no convincing knowledge concerning the nature of the agent causing infantile paralysis existed. The epidemic of 1907 in this country, in France and in Germany led to a renewed study of the nature of the infection, in the course of which the more subtle and recent methods of bacteriology were employed.

These methods led almost simultaneously, in the United States, by Doctor Lewis and myself, and in France, by Landsteiner and Levaditi, to the discovery that the infectious agent was an extremely minute micro-organism that readily passed through the pores of earthenware filters and constituted, therefore, an example of the so-called filterable viruses, of which at the present time several examples are known to cause infectious diseases in man and the lower animals. The filterable nature of the virus has now been confirmed wherever the subject has been accurately investigated. An acquisition of the fact of the nature of this virus, and of the further fact, on which the discovery of the nature of the virus actually depends, that both the higher and lower monkeys are subject to the experimental disease, rest the recent great advances which have been made in the investigation of infantile paralysis.

Proved by Experiments.
Experiments with monkeys conducted with extreme care proved that infantile paralysis could be transmitted from one patient to another. The disease, moreover, is caused by a most minute organism or germ, as the popular phrase has come to be.

"It is, so far as we can now judge, one of the most minute organisms known to cause disease," says Doctor Flexner. "This conclusion follows from the fact that in aqueous suspension, such as is secured through preparing an emulsion of the spinal cord in distilled water, it passes with great readiness and little or no loss of potency through the pores of the densest and finest porcelain filters, namely,

the so-called Chamberland filter. It passes with even greater ease through the somewhat less dense Berkefeld filter. It is extremely doubtful whether the virus has actually been seen. On staining film preparations of the filtrate with mordanting dyes, preparations are secured which under the highest powers of the microscope exhibit minute points, circular or slightly oval in form, which possibly, although not certainly, represent the stained parasites.

Filtrates Highly Potent.
"When the filtrates are examined under the dark microscope, innumerable bright dancing points, devoid of definite size and form, and not truly motile, can be discerned. That these particles represent the micro-organism of poliomyelitis cannot be affirmed, since similar particles are present in filtrates obtained from nervous and other tissues which can be viewed also as consisting of simple protein matter.

"The filtrates are highly potent. Quantities as small as one one-thousandth to one one-hundredth of a cubic centimeter suffice to cause the disease in monkeys after the usual incubation period, when injected into the brain. The virus is highly resistant to exter-



Dr. Simon Flexner.

nal agencies and conditions. It withstands glycerination for weeks or months, very much as the virus of vaccinia or rabies does. It withstands drying over caustic potash for weeks without any or marked reduction in potency, showing a greater degree of resistance than the virus of rabies."

Doctor Flexner has discussed the disease before numerous medical societies, both in this country and Europe, and the following paragraphs are taken from some of his papers:

A Living Organism.
That the virus is a living organism must be concluded from the fact that such minute quantities of it suffice to carry infection through an indefinite series of animals. We have propagated the virus now through 23 generations, representing 25 separate series of monkeys, and as many removed from the original human material supplying it, and the activity of the virus for the monkeys has increased rather than diminished in the course and as the result of the successive transplantations. Whether the virus has been or is to be

cultivated outside of the body is still an undecided question.
The spinal cord of a paralyzed monkey always contains the virus we are considering. If a camel's hair pencil or pencil of cotton is covered with some of the broken up tissue of such a cord and painted upon the mucous membrane of monkeys these animals will develop in due time the paralysis and other symptoms of poliomyelitis.

The chief terror of the disease lies in its appalling power to produce deformities. When death does occur it is not the result, as in many infections, of a process of poisoning that robs the patient of strength and consciousness before its incidence, but is caused solely by paralysis of the respiratory function, sometimes with merciful suddenness, but often with painful slowness, without in any degree obscuring the consciousness of the suffering victim until just before the end is reached. No more terrible tragedy can be witnessed.

The employment for treatment of the immune serum, taken from monkeys or from human beings, exercises a definite if not very strong protective action upon inoculated monkeys. Either the disease is prevented altogether, or its evolution is modified in such a manner as to diminish its severity. When the virus used for inoculation is highly adapted to the monkey and thus very virulent, it is more difficult to control the result than when it departs less from the original type and is less active.

How It Acts.
The immune serum has thus far acted best when it was injected into the subdural space on several successive days. This is in conformity with the fact that however introduced into the body the virus establishes itself in communication with the cerebrospinal fluid where it propagates for a time. Later the virus localizes in the nervous tissue itself and becomes accessible not from this liquid only but, probably, from the general blood also.

The serum introduced into the subdural space soon escapes into the blood; and thus a double action is secured; on the one hand it reaches the nervous tissue directly from the cerebrospinal fluid, and on the other indirectly with the blood. An immune horse serum at first gave disappointing results, but later its employment by intramuscular injection has given more promise.
The point of departure which we have adopted is the drug hexamethylenamin (urotropin), which possesses a degree of antiseptic action in the body and is known to be secreted into the cerebrospinal fluid. When the drug is administered by mouth it can be detected by chemical tests in the liquid in a short time. When inoculation of virus and administration of the drug are begun together and the administration continued for some days afterward, the development of the paralysis is sometimes but not always averted.

Hexamethylenamin lends itself to modifications by the addition of still other antiseptic groups to its molecule. We have tested a large number of such modifications and have found certain ones to exceed the original compound in protective power, and others to promote the onset of paralysis. None is wholly without some degree of injurious action upon the sensitive and vital organs of the body. But manipulating skill has already succeeded in eliminating the objectionable and improving the valuable features of certain drugs so that they exert action but little upon the organs and severely upon the parasite, when they become useful therapeutic agents.

Power May Return.
In the less severe cases of infantile paralysis only a group of muscles undergo complete paralysis and atrophy, and there is always hope of some return of power in a paralyzed limb. Associated with the withered condition of the limb due to the muscular atrophy is an enfeebled circulation, rendering the limb cold, blue and livid; the attrition of the bones and other parts is involved, so that a limb paralyzed in early infancy does not grow and is shorter than its fellow.

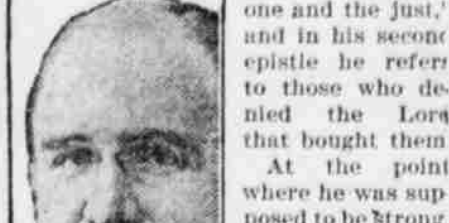
In Scandinavian countries the disease is prevalent and sometimes assumes an epidemic form, whereby one is led to believe that it is due to an infective organism.
Beginning in 1907, or thereabout, a pandemic of the disease arose. The United States, Austria, Germany, and latterly France have certainly had epidemic outbreaks. It is considered a matter of significance that the original foci of the epidemic disease in the United States, occurring in the summer nine years ago, were among the Atlantic seaboard states, and that the two centers of population most seriously affected were Greater New York and Boston. The particular point of importance in this respect arises from the fact that those two centers of population receive first and in a most concentrated way the immigrant populations from northern and eastern Europe.

PETER'S DENIAL

By REV. L. W. GOSNELL
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TEXT—And the Lord turned, and looked upon Peter. And Peter remembered the word of the Lord, how he had said unto him: Before the cock crow, thou shalt deny me thrice. And Peter went out, and wept bitterly.—Luke 2:31, 32.

Peter never forgot his denial. Speaking to the Jews he says, "Ye despised the holy one and the just," and in his second epistle he refers to those who denied the Lord that bought them.



At the point where he was supposed to be strongest, he failed. He is noted as the confessor of Christ, yet became his denier. He was the brave man who undertook to defend Christ in the garden, yet he covered before the servants in the high priest's palace. He was not in danger of being killed if he had confessed Christ, but denied him to save himself from being taunted. And all this occurred on the same night in which he had received the bread and wine from the hands of his master, and had submitted to having his feet washed by him! We are only kept from chiding him because we are reminded of our own failures and our denials of Christ.

The Sin of Profanity.
Added to the sin of denial was that of profanity, for we are told that he began to curse and to swear, saying he knew not the man. The sin of profanity clings to a man, and the tendency sometimes appears even after conversion. Many have failed at this point, although delivered from other sins. An old writer has pointed out the folly of it in these words: "The devil tempts men through their ambition, their cupidity, or their appetite, until he comes to the profane swearer, whom he clutches without any reward." There is a melancholy comfort in the fact that Peter seemed to feel they would not suspect him of being a disciple if they should hear him use profane language; the world expects things of Christians.

Several elements enter into the story of Peter's denial. First of all, we notice his self-confidence. "If all shall be offended in thee, I will never be offended." His failure doubtless revealed to him his weakness, and was used of God in bringing him to a better mind. By such testings we learn our own helplessness and are driven to the strong one for strength. In his epistle, Peter emphasizes the value of meekness and godly fear.
No Business With the Funksies.
Another secret of Peter's failure is found in the society he kept. He had followed his Lord afar off, and when he came into the palace, sat down with the high priest's servants. As an old Scotch woman said, "he had no business with the funksies." It is difficult to maintain a Christian profession even when we must be among the ungodly, but there is great danger when we choose them for our companions.

Again, the element of surprise has to be reckoned with. Peter would have been brave in the garden in open conflict with Christ's enemies, but he did not expect to be assailed as he sat by the fire that night. Earnest Christians learn to dread temptations which approach with the stealth of a serpent. The writer recalls the occasion when he first saw a "sensitive plant," and remembers his surprise when its leaves withered at the approach of his hand. If we are to escape better than Peter did, our souls must be so tender that the very approach of temptation will cause them to shrink in dread and hide themselves in Christ.

Yet this man was restored even after such a failure. There were four steps in his restoration.
Steps Back to Christ.
First, there was the look of Christ. After the crowing of the cock, we are told the Lord turned and looked upon Peter. What a look of wounded love that must have been! Yet we should not forget that the same sad, piercing gaze is turned upon us when we grieve Christ.

Secondly, the Lord sent a special message to Peter on the morning of the resurrection (Mark 16:7).
Thirdly, he had a private interview with this apostle on the day he arose (Luke 24:34; 1 Cor. 15:5).
Finally, when he appeared to the seven on the shore of the Sea of Galilee, he reinstated Peter most fully. The story is told in John 21, and is worthy of careful perusal. Three times the Lord asked him if he loved him, and the apostle had thrice denied, so he was allowed to confess him three times. Poor Peter might have thought he would never again be entrusted with responsibility, but three times the Lord bade him feed his flock. As a climax, this man who had said he would follow Christ to death, but had failed so shamefully, was told he would, after all, have the privilege of dying for his Lord. What comfort here for the backslider! With what new meaning may we slug, "He restoreth my soul."

NATIONAL CAPITAL AFFAIRS

House Debates Whether Wife Is Member of Family

WASHINGTON.—There have been some interesting debates in the house of representatives recently, and for reasons best known to the general public these debates have not yet seen the light of print save in the gloomy columns of the Congressional Record. At almost any time one can drop into the house and get a thrill, but owing to the news from the Mexican, Austrian, Galician and other harried borders it takes more than a speech in congress to get a rise out of a newspaper these days. Perhaps it is for that reason that the orators of congress are seeking new fields in their endeavor to start a little something in the way of publicity.



For instance, it was not long ago when the national house of representatives debated the question of whether a wife is a part of a man's family. This is not a joke. It really happened. It was while the Hay resolution was being discussed in a tumult which reminded old-timers of a town meeting. This resolution provided money for dependent families of National Guardsmen. They stuck in the father and mother and little brothers and sisters and the children, amid cheers at each addition.

In the midst of this wild clamor up rose a tall Kansas man and solemnly demanded that the word "wife" be inserted then and there. He argued that there were reasons for this; that certain volcanic actions on the part of cross-grained courts, presided over presumably, by woman-hating bachelors or cowardly henpecked husbands, made it necessary that whenever the national legislature is making laws for the benefit of the family, the word "wife" must be written in with indelible ink in capital letters, so as to prevent the woman of the house from being robbed of her due.

Then the house batted the suggestion back and forth like a basket ball. Some of them said the Kansas man was right and some of them said he was wrong.

In the melee no one seems to remember whether the wife got into the resolution or not.

Uncle Sam's Campaign to Safeguard Milk Supply

THE milk you drink interests Uncle Sam. He recognizes it to be one of the most easily contaminated and most general use. The dairy division of the bureau of animal industry of the department of agriculture, therefore, has not stopped at working out the economics of dairying for the benefit of the farmer, but emphasizes the health aspect of the industry and carries on energetic educational campaigns in communities where co-operation is desired.

One important and eminently fair phase of the extension work of the government's dairy experts is in educating consumers to a realization of the fact that it costs the producer more to insure scrupulous cleanliness of the milk supply than it does to place on the market the usual mediocre product or the dirty, dangerous milk that is offered under the worst conditions. The attitude of the dairy division is that pure milk costs more but is decidedly worth it, and the experts in their campaigns attempt to impress this truth on three interested groups—the consumers, the producers and distributors and the municipal and state authorities who have in charge the enforcement of the local food regulations.

When the federal specialists go into a community to co-operate with the local health officials they first make a thorough investigation of the milk supply and its regulation, and finally locate the producers of the milk that is below grade, and visit their farms. The attitude toward these producers is not one of condemnation. The experts go instead to their farms to help them to better their sanitary conditions. They look to the health of the herds and their attendants, the sanitary condition of the barns, the proper cleaning and sterilization of all utensils and the methods for insuring a sufficiently low temperature for the milk. In the educational campaigns the responsibility of the consumer in the matter of temperature also is emphasized. The specialists point out that however carefully the producer and distributor has handled the milk, it is likely to spoil if permitted to remain exposed to the sun or in a warm room after delivery.

Two Washington Policemen Adopt Tramp Pigeons

POLICEMEN CHARLES M. BIRKRIGHT AND JOHN MAHER of the Seventh precinct have adopted a flock of tramp pigeons. Both men are stationed at the Georgetown terminus of the Aqueduct bridge. They take turn about on the crossing there, and the pigeons have become their friends and pets.



While congested traffic is swirling about the bridge terminal the pigeons alight and feed in the center of the crossing. They walk over the policemen's feet and between their legs. Sometimes they even alight on Birkright's person.

The pigeons seem to know the traffic laws. At least they have a full knowledge that as long as they stay under the crossing man's arm traffic cannot touch them, and they feed tranquilly while street cars, motor trucks and lighter machines and wagons pass all around them.

Birkright and Maher have been stationed at the bridge for years. When Birkright first got the assignment he was attracted to the tramp pigeons that roost and breed in the overhead trusswork and in the girders under the bridge floor. He made friends with them.

Later Maher came to the crossing, alternating with Birkright. He, too, made friends with the pigeons. They seemed to demand this friendship of him, swooping down on the crossing when the man in uniform put up his umbrella.

Now neither man ever goes to his post on the eight to four o'clock trick without a pocketful of food for those birds.

Senator Martine Gave His Dog Suitable Burial

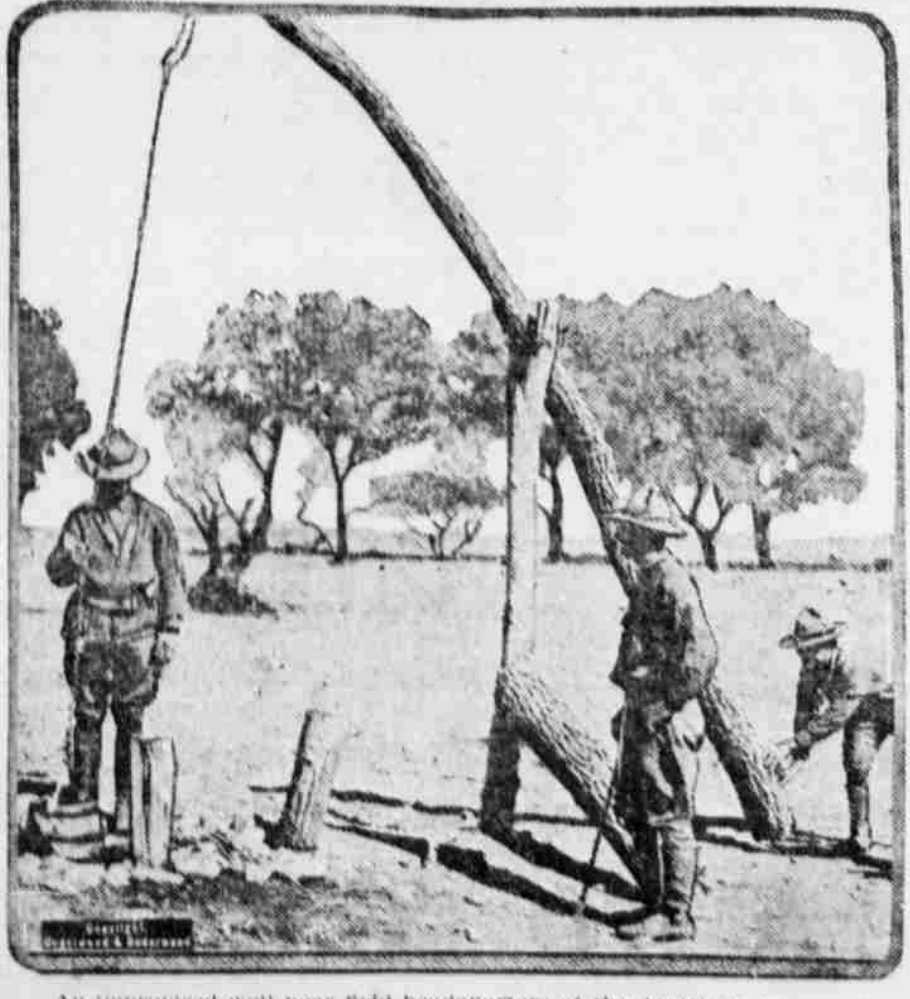
SENATOR MARTINE of New Jersey had a dog. It was not much of a dog, taking it by and large, but it had been a member of Martine's household for a long time and he was attached to it. A while ago the dog died, from a complication of maladies superinduced by extreme old age.

Senator Martine was insistent that the dog should have a decent and proper burial. He was living in a Washington apartment house at the time, and the finding of a suitable burial plot was a problem. He could not go out in the backyard and hold his funeral, because there wasn't any backyard. Anybody living in a small apartment who has ever put in a day with a pedigreed deer pup on his hands, wondering what to do with it, will readily appreciate that the situation would soon become acute. To Martine's delight he learned that there is in Washington an ultra-exclusive dog cemetery, intended only for dead dogs of high social standing. Martine went and bought a lot in that cemetery and gave his dog such a burial as any dog might well be proud of.

The prospect of such a burial should reconcile almost any dog to having had his day. Martine forsook his senatorial duties long enough to go to the funeral and personally see to it that the dog was paid every respect.

Today a neat little marble headstone marks the spot where the Martine dog made its final descent into the bosom of the earth.

IMPROVED WELL IN MEXICO



An improved well near field headquarters at the American base camp in Mexico. The United States soldier is versatile. He can get himself out of almost any predicament with only the natural resources of the country at his command. The water secured from the wells is of better quality than that found in the waterholes and rivers.