

found in the juice of tissue taken from the hard, infiltrated base of the carbuncle. Cultures as well as inoculations were positive.

The patients were taken to the plague hospital of Rio de Janeiro, where both recovered.

I am convinced that the peculiarly mild course which the disease took in the last two cases, notwithstanding the fact that cases are more fatal in which the buboes are located in the axilla near the center of circulation, must be ascribed to the use of the preventive serum.

There can be no doubt that the plague virus was carried to our steamer in Alexandria, although no direct communication with the land took place. The entrance of an infected harbor rat into the steamer, thereby transporting the virus to the numerous ship rats, I consider very improbable. I believe the provisions hauled to the ship in dirty sacks and baskets were the sole cause of the outbreak.

In case of plague the rats on board ship are a menace not only to the ship, but also to the ports at which it touches, because the pest-infected rodents soil the whole ship and the merchandise with their excretions, and in this way they are likely to transmit the bacilli to the rats of the harbor, for the harbor rats sniff at and gnaw the goods, especially eatable ones, and may eat the dead, plague-infected rats of the steamer.

HISTORICAL REVIEW.

That epidemics of pest are very often preceded by an enormous death rate among rats and mice laymen seem to have known for ages.

In Hindustan and Uganda and in other endemic plague foci, when rats come out of their hiding places and die in large numbers, a panic is created and the people leave their homes forthwith.

Rats may often have been the cause of single cases as well as of epidemics of plague, the origin of which could be explained in no other way. This applies particularly to cases occurring in harbors and especially in docks where the propagation by means of men or their baggage was excluded, but where navigation in some way played an important part in transmitting the disease. This method of transmission of plague may have been operative in many cases of outbreak of the plague on vessels long after leaving an infected port. Owing to the small power of resistance of the plague bacillus to dryness and heat, the direct importation of the pest through primarily infected merchandise is at present considered improbable, especially after a long voyage in tropical and subtropical latitudes. In such cases, therefore, the transportation of the bacilli must be assigned to an agent which can increase and preserve the virulence of the virus.

Pest affecting a limited number of rats having free communication among themselves would destroy them all in a short time on account of the great susceptibility of these animals to plague infection. On board ship, however, where the animals can not come in contact with each other so easily, especially when they are partitioned off in different separated parts of the hold, an epizootic may progress more slowly and last for weeks, finally transmitting the disease even after a long interval from one remote port to another. Since the discovery of the plague bacillus real proof of this fact has been established. For instance, the German government sent a commission to investigate the epidemic of plague which seized about 90 persons in Oporto in 1899. It was found that an epidemic of pest had killed many

rats in the docks and their surroundings before the outbreak among the population occurred. The rats were either directly infected from the rats of a steamer or through merchandise which had become soiled with the excrement of plague-infected ship rats. A similar experience was reported by Kitasato in Kobe, Japan, in 1899, another in Sydney in 1900. Under favorable conditions the disease may remain confined to the rats. A number of dead rats, for instance, were found when the steamer *Rembrandt* returning from Smyrna in January, 1901, discharged its cargo in Bristol. The cadavers contained virulent plague bacilli; yet the disease was not communicated to men.

The steamer *Pergamon* returned to Hamburg January, 1901, from a cruise in the Mediterranean, and dead rats in groups of five or six were found between bales of merchandise. The number of rat corpses aroused suspicion. The bacteriologic examination which was ordered by the board of health showed that the rats died from bubonic plague. The merchandise was partly burned, the rest carefully disinfected, as was also the entire steamer; the rats were all exterminated, and in this way an infection of the rats in the dockyards and harbor and possibly among the inhabitants was prevented. No case of plague among the crew had occurred.

From such experiences it is evident that for international trade international quarantine rules ought to be made, demanding as one of their principal points systematic extermination of the rats on board with sulphur dioxid, carbon dioxid, carbon monoxid, traps, poison or a sufficiently virulent culture of Danysz's bacillus, while the ship lies empty at its terminus. The same should also be attempted with dock and harbor rats.

The Australian and Turkish governments have already included similar requirements in their quarantine regulations. Infected merchandise must be burned or very carefully disinfected; valuable goods which will not stand disinfection must be kept in an isolated place inaccessible to rats until the virus has entirely lost its activity.

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THE TREATMENT OF ARTHRITIS DEFORMANS WITH THE ROENTGEN RAYS.

A PRELIMINARY REPORT.*

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We submit this preliminary report on the treatment of arthritis deformans with the Roentgen rays, and hope at a later date to make a more complete report on these and similar cases and then to be able to draw more definite conclusions.

CASE 1.—Mr. T. J., aged 47, a miner, was admitted to the wards of the Medico-Chirurgical Hospital under the care of Dr. Anders Oct. 26, 1905. The man's father died of miner's asthma, otherwise the family history is negative. His previous medical and social history have no bearing on the disease.

Present Illness.—This dates from July, 1902, when his feet, especially the joints of the toes, became swollen, tender and painful. This kept him from work one year; he then improved and was able to work four months. Since that time, which was fifteen months before admission to the hospital, he has

* Read before the Philadelphia County Medical Society, March 14, 1906.

not worked on account of the stiffness, swelling, tenderness and pain in his joints. Four months before admission his left wrist became swollen, tender and painful. Soon after this the left elbow and shoulder became similarly affected, and the joint movements became more and more restricted with the advancement of the disease. At the time of admission he could not, by his own power, raise his left arm from the side. It could, however, by passive motion, be raised half way to the level of the shoulder.

Physical Examination.—This showed the left shoulder to be larger than the right, and tender and painful when passive motion was attempted. The pain seemed to be confined to the joint. No crepitation could be elicited. The left elbow was tender, and somewhat stiff or partially ankylosed, but not swollen. The left wrist joint was tender, stiff, painful and swollen, and the periarticular tissues were infiltrated. The fingers of the left hand showed a tendency to bend backward and outward. The joints of the right upper extremity were normal. The feet were deformed, the toes were bent strongly outward, and the ankles were swollen and tender. The phalangeal and metatarso-phalangeal joints showed great restriction of movements. The knees showed a little joint rigidity, otherwise nothing abnormal.

The general examination showed some emaciation, an emphysematous chest, and more or less general atheroma of the arteries, otherwise there was nothing abnormal.

Radiographic Examination.—This was made Oct. 31, 1905, It showed particularly decalcification of the bones of the wrist joint, with erosion of some of the joint surfaces, and an exudate into the joint spaces. The elbow showed a similar decalcification, with some exudate into the joint space, and a roughening of the tip of the olecranon. The shoulder showed a similar condition.

Treatment.—In order to rule out any constitutional effect only the joints of the wrist, elbow and shoulder of the left side were selected for treatment. The arm was bent in such a way that all of these joints were brought into the field of exposure at one time. The man was treated three times a week, with a medium tube, at a distance of fifteen inches, with about one milliamperere of current going through the tube. Each treatment lasted about fifteen minutes. Treatment was begun Nov. 14, 1905. After the first treatment he had less pain. After the third treatment there was distinctly less stiffness. The diminution in pain and stiffness continued progressively until at the end of about one month, and after sixteen treatments, the joints of the left upper extremity were practically well. While at first the patient could not raise his arm from his side he then could touch the ear on the opposite side of the head. He could raise his left arm to within two inches as high as the right, and he could reach around his back nearly as far with his left hand as with his right. The wrist improvements were normal.

Second Radiographic Examination.—This was made Dec. 11, 1905, less than one month after beginning x -ray treatment, and showed a decided approach to the normal.

Third Radiographic Examination.—This was made Feb. 27, 1906, nine weeks after discontinuing the treatment and showed only very slight difference in the joints of the two sides.

Internal Medication.—With the x -ray treatment sodium iodid was given internally, and massage and passive motion were given locally. While at the end of about a month the joints of the upper extremity had practically recovered, the joints of the lower extremities, which had not been treated with the x -ray, showed no change, which seems to indicate that it was neither the constitutional treatment nor the massage and passive motions in themselves that produced the results.

Treatment of Lower Extremities.—Since December 19 the joints of the lower extremities have been treated. There has been the same diminution in the amount of pain and stiffness, but the improvement has not been so well demonstrated as in the upper extremity, probably because of the marked deformity of the feet. At the end of a month, however, the man was able to sew up the cuts he had made in his shoes to make room for his feet nearly a year previously.

CASE 2.—Mr. O. G., aged 53, was admitted to the wards of

the Medico-Chirurgical Hospital under the care of Dr. Daland. The family history is of no importance. Since 1890 he has had painful joint affections, short in duration, and with only one joint affected at a time, several months elapsing between attacks.

Present Illness.—This began in August, 1903, with pain, swelling and stiffness in the left ankle and instep. After four months the pain and swelling began to subside, but the soreness and stiffness remained. In June, the right knee, and in September, 1904, the left knee became similarly affected. The left knee continued to grow larger and more painful until admission to the hospital.

Physical Examination (Notes by Dr. Robertson).—This showed briefly a man older in appearance than his years; tendency to sweating; the right pupil a little larger than the left; the gums and teeth in bad condition; some wasting of the shoulder girdle and upper arm muscles. Both wrists, ankles and both knees more or less swollen and ankylosed. There was considerable synovitis of the left knee joint. The chest and lungs were emphysematous, and the heart showed a weak myocardium.

Radiographic Examination.—This was made Jan. 2, 1906, of both wrists, both knees, both ankles and showed in general the changes more or less characteristic of arthritis deformans, viz.: decalcification of the extremities of the bones, an exudate into the joint, erosions, or bony outgrowths of the bones, and actual deformities. In addition, this case showed marked atheroma of the arteries about the ankles.

The left knee, which gave the patient most concern, and which alone was treated, showed in particular distinct enlargement, an exudate into the periarticular tissues, an elevation of the patella by the fluid which was seen to fill the entire synovial sac. The patella showed a distinct exudate, which appeared to be beneath the periosteum on its anterior surface, and a more or less irregular exudate on its upper and posterior surface. The joint surfaces of both the femur and the tibia were eroded.

Treatment and Result.—The left joint alone was chosen for treatment because this was the one that most annoyed the patient. At the time of beginning treatment the knee was in a semiflexed position and could neither be extended nor flexed, and was very tender and painful.

The technic of the treatment was similar to that described in connection with the first case. After ten days and four treatments the pain had nearly subsided and the man could move the joint much more freely. After five weeks and fifteen treatments he was able to walk out of the hospital (at first he was bedfast). He has been able to go back and forth for treatment. There was an interval of three weeks in the treatment on account of a misunderstanding. During this time his pains slightly increased. In this case, as in the first one, massage and passive motion were given in conjunction with the x -ray treatment. A radiographic examination at this time showed a diminution in the periarticular exudate, and only about one-third of the exudate in the synovial sac.

We were led to investigate this treatment by the very excellent report made by Moser¹ on the treatment of gout and rheumatism with the Roentgen rays. His first case was reported in 1904.² This case began as an acute attack of gout, affecting the great toe. At the time of beginning treatment, however, seven years later, the patient presented the characteristics of general arthritis deformans. The disease had for a long time been at a standstill. A radiographic examination of one of the knees seemed to excite an acute attack, which subsided very promptly. This led Moser to repeat the exposures. At first each exposure was followed by acute pains; later the pains subsided; and then the joints became more mobile.

Moser's last report is based on the treatment of six cases of gout and six cases of rheumatism. In all good

1. Forts. auf dem Geb. der Röntgenstrahlen, vol. ix, No. 1, Aug. 29, 1905.

2. Centbl. f. Chir., 1904, No. 23, p. 712.

results were obtained. Some of the cases of gout were treated during an acute attack with most prompt relief. In the cases of chronic rheumatism the pain, tenderness, swelling and stiffness either disappeared or were much diminished. As early as 1897 Sokolow³ treated acute and chronic rheumatism in children's joints with the rays with marked improvement.

In 1900 Albers-Schonberg⁴ observed marked improvement in cases of gout that had been exposed to the rays.

We believe that this method of treatment is a valuable adjunct in the treatment of these chronic joint affections, but that it is advisable to use massage and passive motion in conjunction with the Roentgen rays. We believe that the rays stimulate and increase the metabolism within the joint, and that this should be taken advantage of, and the massage and passive motion added to assist in the removal of the exudate.

THE COUNTRY DOCTOR.

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A country doctor ought to know what any trained physician ought to know. In order to make a success of his profession he must have a most thorough preliminary education, must avail himself of the advantages of his medical course to the utmost and be determined to improve himself at every opportunity.

His training when he enters on his life's work has simply laid open to his vision a glimpse of its possibilities. His future depends largely on his capacity for work. His savings for years must be reinvested in office equipment. He must embrace the opportunities freely given by the masters of the profession at their clinics to see their work and to learn to a certainty that their success has been by intense application for years along definite lines. Specialism is only a division of labor as practiced by all people as they have advanced through the various stages of development.

The discovery of ether by Morton in 1846 and the theory taught by Pasteur that micro-organisms caused fermentation, amplified by Lister in the treatment of wounds, greatly broadened the practice of medicine, and especially advanced and separated to some extent the practice of surgery from that of medicine.

The acceptance and perfection of antiseptics was of slow growth and gained almost no foothold in this country until Lister's visit to Philadelphia in 1876. Strange as it seems to us who never practiced any other method, the older members of the profession were loath to accept its truths and surgery was taken up by a few men and practiced as a specialty.

About this time Norris and Strawbridge returned from Germany, bringing with them the advances made in the treatment of diseases of the eye, and especially they had gained an inkling of the methods of refraction which were developed, and the oculist soon appeared. It is a fact that nearly all of the headaches just above and back of the eyes are caused by defective vision, and that large numbers of school children go to their physicians and are given headache remedies without end. This is to no purpose, and they finally have to give up school on account of becoming nervous wrecks, unless by chance they happen into some jewelry store and are given some kind of lenses to wear which may relieve the trouble to some extent.

The country physician, therefore, should take up refraction work. The great mass of working people simply can not pay the fee demanded by the oculists and are forced to put up with the indifferent work of the so-called opticians. Two or three hundred dollars will buy the necessary equipment and a month's work in some eye infirmary will give one a start, and one can do as well at once as any optician will ever be able to do.

A general knowledge of the diseases of the eye will be a help to one in many instances. After four or five years study and practice one will become very proficient and will be enabled to make many people more useful and add greatly to their happiness. Physicians as a class must give more attention to diseases of the eye, as a physician loses standing in a community if he fails to distinguish between a case of iritis and toothache, and a patient is apt to tell his neighbors if some country doctor treats a swollen and inflamed eye for weeks and then calls in a specialist who discovers a wheat-beard imbedded in the cornea.

Before the days of antiseptics, McDowell and The Atlees had boldly invaded the abdominal cavity and Marion Sims had given to the world the speculum. Soon after the advent of antiseptics the surgeon found that women could be mutilated almost with impunity and the era of the gynecologist began, but fortunately for suffering womankind it has passed away.

The great work of Howard Kelly in making plain to the profession at large the technic of plastic work, the advances made by McBurney in the operative treatment of appendicitis, the pathway blazed by the Mayo brothers in surgery of the gall bladder, have made it possible for any intelligent man to do good work and save his patients unnecessary suffering and, frequently, an untimely death.

The well-trained physician needs to recognize that the great question before the people now is this: Can my physician take care of me if I am sick and can he tell me how to keep well, or at least guard me from unnecessary sickness?

A physician that can make a diagnosis of appendicitis with certainty ought to be capable of operating and will give his patient a better chance of recovering than he would have if he waits a few hours longer to be sure of his diagnosis before putting the family to a useless expense of sending to the city for a great man and then waiting twenty-four hours more until he arrives, and perhaps by that time he finds the patient suffering with a general peritonitis.

At any rate a man that can not operate is not a safe person to leave a patient with after he has been operated on. If the case does not do well the great surgeon is far away and can not be had when again needed. If the patient wakes up in the night with every symptom of obstruction of the bowel something must be done and done at once, and it now requires more skill to give the patient the best chance than it did to do the primary operation, and if the country physician lacks experience or is deficient in equipment and does not dare to make the attempt to remove the obstruction, the patient will die.

The public at large would laugh at the physician that sent for the city man to reduce every dislocation or treat every case of fracture that came to him. Think of the worry, the anxiety that a bad fracture of the wrist or of the elbow entails.

Since few cases of fracture should be treated without careful x-ray examination, and in most instances must be reduced under an anesthetic, and not

3. Vratsch., 1897, No. 46.

4. Muench. med. Wochft., 1900, No. 9, p. 284.