2d. That the virus is present whether there is disease of the udder or not.

3d. That there is no ground for the assertion that there must be a lesion of the udder before the milk can contain the infection of tuberculosis.

4th. That, on the contrary, the bacilli of tuberculosis are present and active in a very large proportion of cases in the milk of cows affected with tuberculosis but with no discoverable lesion of the udder.

THE TREATMENT OF PHthisis Pulmonalis WITH SMALL DOSES OF MERCURY BICHLORIDE COMBINED WITH POTASSIUM IODIDE.

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In The American Journal of the Medical Sciences for January, 1876, may be found an article from the pen of Prof. Edward L. Keyes, of New York, giving the results of his experiments showing the effect of small doses of mercury in modifying the number of red blood-corpuscles in syphilis. In these experiments the hematometer of Hayem and Nachet was used, and "every possible source of error eliminated."

As the result of these experiments, Prof. Keyes deduced the following conclusions:

First. Five million red blood-corpuscles in the cubic millimetre, is a full high average for the adult healthy male; fine conditions of physical health reach above six millions.

Second. Mercury decreases the number of red blood-corpuscles when given in excess.

Third. Syphilis diminishes the number of red blood-corpuscles below the healthy standard.

Fourth. Mercury in small doses, continued for a short or long period in syphilis, alone or with the iodide of potassium, increases the number of red corpuscles in the blood and maintains a high standard of the same.

Fifth. Mercury in small doses acts as a tonic on healthy animals, increasing their weight. In large doses it is debilitating or fatal.

Sixth. Mercury in small doses is a tonic for a time at least, to individuals in fair health, not syphilitic. In such individuals it increases the number of red blood-corpuscles.

These conclusions deeply impressed me at the time of their publication. I often reasoned upon the probable value of this drug in other forms of disease characterized by cachexia, emaciation, diminution, or destruction of red corpuscles, fibrous infiltrations, etc. About eight years after reading Prof. Keyes' article I first administered small doses of bichloride of mercury with potassium iodide to patients suffering from
phthisis, with a result which, compared with former experience in such cases, was no less surprising than gratifying. During the succeeding years I have witnessed a repetition of its action sufficiently often to convince me of its great value in treating this formidable disease, which annually destroys so many of the lives of human beings and of the lower animals.

The following cases represent a part of my experience only. Their histories are necessarily incomplete, scattered as they are over several years, no records of the cases being kept. A few dates from my ledger are the only recorded facts, and even these are in some instances absent, the poverty of the patients forbidding a charge. The important facts involved are not the less valuable because of these imperfections. The following conditions were present (in different degrees of course) in all the patients, viz.: A frequent pulse, elevated temperature, a wasted or wasting body, loss of appetite, cough, often accompanied by bloody expectoration, pulmonary dulness on percussion, increased vocal resonance, prolonged expiratory murmur, moist râles, etc.; in short, those factors were present the tout ensemble of which constitutes consumption. The mercury was given in doses ranging from the thirty-second to the sixteenth of a grain; the potassium iodide in from two- to five-grain doses.

Case I.—On March 18, 1884, I was called to see J. A., aged sixteen years, whose parents informed me that for some time he had been in failing health with cough. The family history was bad, several maternal uncles having died of acute phthisis. His condition was at once seen to be very serious—pulse rapid, fever high, profuse sweating, body weight much reduced, solidified lung, and the other physical signs denoting a rapid destruction of its function and its substance.

Prescribed veratum viride to control heart's action, and put him on bichloride of mercury and potassium iodide three times a day. Improvement was perceptible within a few weeks; the parents were instructed to continue the medicine for a year or more. Occasionally saw this patient until September of the same year, when he appeared to be in almost robust health, having reached that condition by slow and steady progress. His parents considered him entirely well and discontinued the remedy. I was again called to see him on April 30, 1885; found the disease had redeveloped during the latter part of the winter, and had, in fact, produced a hopeless condition, from which he soon died.

Case II.—William H., adult, was seen March 4, 1885. There had been a steady decline in health for weeks; his left lung was solidified almost throughout its entire extent, bronchial respiration, moist râles, temperature of 103°, pulse 125; great emaciation, night-sweats, cough with bloody expectoration; gave veratum viride, applied a blister, and prescribed bichloride of mercury and potassium iodide, which he began taking in a few days. Improvement was slow but uninterrupted when once established; the remedy was continued for one year, during which time his lung returned to a nearly normal condition, his weight being seventeen pounds greater than ever before. Afterward this patient became dissipated, careless, went poorly clad, and was necessarily and unnecessarily
much exposed. During the latter part of the summer of 1888 he was overtaken by a rain-storm; from this exposure the disease was rekindled. He died in the care of another physician on the 30th of March, 1889, having lived three years of comparative health and usefulness from the time of the first attack.

Case III.—Annie A., was seen in consultation. Family history of phthisis, from which disease she was suffering in its acute variety; fever, quick pulse, pulmonary consolidation, etc. The bichloride of mercury and potassium iodide were given, combined with fluid extract of phytolaccce; convalescence was established in due time and maintained until perfect health was restored, and yet remains.

Case IV.—Miss Mary B., just entering into womanhood; a maternal aunt died of phthisis. There were present in this case cough, very rapid pulse, loss of appetite and slight loss of flesh, percussion dulness at apex of right lung, disturbed sleep, menstrual period irregular. Other physicians examined this patient—considered her the victim of incipient phthisis; several months' treatment as above set on foot a recovery which a winter spent in Western Texas made perfect.

Case V.—Mrs. W., about fifty years of age. History of consumption in her family; slight consolidation of left lung, temperature constantly above normal, pulse rapid, appetite poor, emaciation, hypertrophy and induration of liver and spleen. Prescribed arterial sedatives, and bichloride of mercury with potassium iodide; these remedies were continued for months with marked benefit. The following winter was spent in the mountains of West Virginia. The remedy being kept up, she returned to Missouri the following spring, and for two years which have since elapsed remains quite well.

Case VI.—Henry F. (colored), aged fifteen years, member of a scrofulous family, brought to my office in the spring of 1888; condition was—solidified lung, exceedingly rapid pulse, temperature 103°, cough, etc., which warranted the gloomiest prognosis; it was difficult to believe that he could survive for six weeks, so worn was he and so extensive and formidable were the disease processes. Prescribed veratum viride, bichloride of mercury, and potassium iodide. The change within eight or ten weeks was marvellous, local and general. Later in the summer, I met this patient riding horseback; he was fat, the ashy skin so indicative of ill-health in his race, having given way to an oily, shiny appearance of that great emunctory. Unfortunately this boy got so well that, in violation of instructions, all medicine was discontinued. While hunting the following winter the rebound of his gun fractured the nasal bones, suppuration and caries followed, his lung affection returned. I saw him the next spring; a resumption of the remedies failed to relieve him and he soon perished.

Case VII.—Miss Mamie H., aged twenty years, consulted me on October 20, 1888. Father's family tuberculous; herself in second stage of phthisis. There was a cavity in apex of right lung, she suffered from frequent chills and almost constant fever; she had rapid pulse, distressing cough, profuse night-sweats, pleuritic pains, and occasionally diarrhea; her appetite was gone, and that part of her body not entering into the composition of skin and bones rapidly going. She was given veratum viride with bichloride of mercury and potassium iodide. There was some amelioration of her symptoms within three or four weeks, after which improvement was steady. In April, 1889, her condition was: No
fever, absence of chills and night-sweats, cough greatly diminished, unmistakable improvement in lung, and return of menstruation, twenty-four months absent. Miss H. weighed in December, after convalescence had begun, one hundred and thirteen pounds with cloak and overshoes on; in March, 1889, her weight was one hundred and nineteen and a half without those articles.

Case VIII.—Mrs. M., a young married woman, mother of three children, youngest born in January, 1889. Two weeks after delivery pneumonia developed, ran an ordinary course, resolution was imperfect; after being able to go into the yard, which she did, and from which she contracted a cold, her cough increased and fever returned. I saw her when this condition had existed for several days. The lung was again solid, pulse rapid, temperature 103°, soon after she was attacked with phlegmasia alba dolens of right leg, and within a few days the same state of affairs developed in the left, the lymphatics of the groins were enlarged and painful, her expectoration was bloody and contained lung fibre. This patient was given antifebrin and quinine, veratrum viride, bichloride of mercury, and potassium iodide.

It is now about three months since she has been bed-ridden with this combination of ills; for a time it appeared that she was a victim of general tuberculosis. The pulmonary condition was one of cheesy infiltration, the result of catarrhal pneumonia, from which, Niemeyer says, "patients usually die in a few weeks consumed by fever." That author gives this as one of the forms of phthisis pulmonalis. I visited Mrs. M. last on the third of May; found her sitting up rocking to sleep her babe; pulse 75; temperature 98°; appetite good and had been for weeks. The lung is yet far from sound, slightly dull on percussion, and very feeble respiratory murmur. This patient had two maternal aunts to die with phthisis. I shall insist upon her continuing the mercury and potassium iodide for twelve or eighteen months.

Case IX.—Master G., four years old, of phthisical family, is recovering from a very similar attack, of three months' duration.

It is not claimed for this remedy that it is a specific; it has failed in the writer's hands in aged patients, and notably in a case of intestinal tuberculosis, although guarded in this case by opium.

On the other hand, I am certain that it has arrested the disease in its incipiency in persons to whom it has been administered, who were members of families which I had seen almost decimated by acute tuberculosis. Cases of this variety are excluded from this paper for the reason that, although the other symptoms of phthisis were present, the pulmonary condition was equivocal.

Since beginning the preparation of this paper I have searched all the medical literature within reach for the history of any use of the mercuric chloride in phthisis. Only one reference has been found. In a paper read May 22, 1888, Dr. Nelson L. North, of Brooklyn, mentions a number of drugs that have been beneficial in consumption; among the others, he says, "the chlorides of mercury, especially the bichloride,
have, I believe, been the means of doing much good.” The American Journal of the Medical Sciences for December, 1888, says:

"Dr. A. Doehmann, after reviewing the literature pertaining to the employment of mercury in phthisis, says, that in his experience calomel has a rapidly favorable action in ordinary forms of anemia, even in cases in which iron has been without effect. It increases the appetite, removes constipation, and regulates menstruation long delayed. Then there is an anemia the result of an already existing phthisical dyscrasia. As is well known, iron in these cases is entirely without benefit, and even sometimes injures by disturbing digestion.

Pulmonary affections, so slight as to be overlooked, often present such symptoms with disturbance of nutrition. As the disease advances slight fever appears, with slight dry or mucous cough, and, finally, objective symptoms become evident. In such cases treatment with calomel for two or three months is followed by the best results, appetite increases, cough and fever diminish, or even disappear, and the night-sweats cease. It prevents decomposition in the intestinal tract, and does not interfere with the digestive ferments." The Editor adds: "G. Martell has for three years been using calomel in tuberculous processes, and has accords to it the first position as a specific antiseptic. He has had the most favorable results from it in tubercular disease."

The preparations of mercury have long stood without a rival in the treatment of syphilis affecting any portion of the body. Wherein does the pathology of a syphilitic lung differ from a phthisical lung? To appreciate more clearly what this difference is, or is not, it is necessary to quote the words of some of those who are entitled to a hearing on this subject. Dr. Thomas J. Mays, Professor of Diseases of the Chest at the Philadelphia Polyclinic, in a lecture delivered January 28, 1889, on syphilitic phthisis, reviews the fifty-eight post-mortem of Hiller, and says:

"From these data it may be observed that syphilitic phthisis does not differ materially in its anatomical aspects from the non-specific, or ordinary, variety."

Walsh, on this subject, says:

"There seems to be nothing distinctive in the anatomical characters of the syphilitic variety of the product, and the connection between the low quasi-inflammatory process producing it, and syphilis, is only to be established by the antecedents of the individual and the coexisting positive results of tertiary syphilis."

Wilson Fox, in Reynolds’s System of Medicine, says upon this point:

"Syphilitic growths in the lungs certainly bear a closer resemblance to tuberculous formations than is presented by almost any other morbid change in this organ;" and further remarks, "I would not, without much further personal experience than I possess on this subject, venture to affirm that syphilitic changes in the lung are identical with tubercle; but it is impossible to study the observations of those who have investigated both processes, and particularly the researches of Virchow, without being convinced of the close analogy between them."
From this striking likeness of the two diseases, it is certainly rational to expect much of that remedy in the one which is the sheet-anchor of hope in the other.

Upon the curability of phthisis, I desire to quote Dr. Aufrecht, Chief Physician at the City Hospital of Magdeburg. In four discourses delivered before the medical society of that city, he says:

"Since the discovery of the tubercle bacillus, the tendency has been to consider the medical treatment of this grave disorder as little better than fruitless, until some certain specific is found against the parasite."

From this opinion or tendency he positively dissents, and maintains that "it is folly to remain inactive awaiting such discovery."

"After a careful study of the investigations of Koch, he does not believe in the causal relation of the bacillus tuberculosis to phthisis, which, if true, would imperatively demand the isolation of the sick. He maintains that the only possible therapeutics of phthisis must be based on clinical experience.

"In his opinion, under continued medical care, supported by dietetic and therapeutic means, especially if applied at a very early stage of the disease, pulmonary consumption, or, more precisely speaking, the lung diseases leading thereto, afford a better prognosis than other chronic diseases."

That the bichloride of mercury acts in phthisis primarily through the nutritive processes, appears most probable. Dr. George Cornet, of Berlin, experimented with eight germicides, including bichloride of mercury, to determine their action upon animals inoculated with tubercle; not one of which could be proven to have influenced the progress of the disease, although all were given in maximal doses, and adds: "Indeed, many of the animals died from the effects of the drug, or showed marked symptoms of poisoning." Dr. Cornet further says:

"That he would be a bold therapeutist who would inject a half pint of a 1 to 1000 solution of bichloride of mercury daily, in the hope of obtaining such a saturation of his patient that he should be unfit ground for the existence of the germs already within him."

Such a one would certainly add to his boldness the extreme of folly. It is very evident that Dr. Cornet did what Professor Keyes said excessive doses of mercury would do—i.e., produce fatal results. In fact, he admits that the animals, or many of them, were poisoned. He, therefore, defeated the object sought to be obtained, hastening the disintegration of the blood and the death of the animal.

From an experience beginning in March, 1884, and extending to the present, it is my opinion that we have in the different preparations of mercury, administered to phthisical patients in small doses, the most potent weapon with which to combat this most malignant foe of mankind; that in a majority of its victims, so treated, improvement may confidently be expected, and a goodly per cent. cured.