The Journal of the American Medical Association

VOL. XXIX

CHICAGO, ILL., JULY 31, 1897.

No. 5.

ORIGINAL ARTICLES.

A FURTHER REPORT ON THE TREATMENT OF TUBERCULOSIS BY IODOFORM INUNCTIONS.

Presented in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY LAWRENCE F. FLICK, M.D.
PHILADELPHIA, PA.

Preliminary to making this report it may be proper for me to say that for some years I have been substituting in the majority of my cases europen for iodoform because of its less offensive odor. I have long since satisfied my mind that the benefit derived from iodoform is due to the nascent iodine given off from the decomposition of iodoform which takes place, either in the tissues of the body or in the blood. Finding iodoform very offensive and having been informed that europen is even more rich in iodine than is iodoform, I was induced to take up europen as a substitute, and have found it equally useful, if not more useful in the treatment of tuberculosis.

On Nov. 12, 1890, in a paper on "The Treatment of Tuberculosis," before the Philadelphia County Medical Society, I first mentioned the use of iodoform by inunction. In that paper I quoted no cases, but simply stated that I had obtained good results. On April 22, 1891, I reported ten cases to the same society and exhibited a number of them. I then summed up my report of the cases as: one, apparently well; three approaching a cure with fair prospects of entire recovery; four having the disease arrested and being in a comfortable condition; and two having had a relapse and doing badly.

On March 12, 1892, I made a further report on those cases in the *Medical News* and quoted five additional cases. By that time, of my first ten cases, four had died, three were apparently well, one was enjoying comparatively good health, and two had disappeared from observation. Of the five new cases, two were apparently well, one promised to recover, and two showed evidence of improvement.

It is now nearly eight years since I began this method of treatment; about six years since I reported my first cases and a little over five years since I made my last report. A further report on the fifteen cases quoted in my former papers will give a true picture of the ultimate results in the treatment of tuberculosis by any and all methods, and will offer a severe test of the value of the method of treatment with which I am dealing. In addition to those cases I deem it proper, however, to give an account of my results with the method of treatment since then, and I will therefore give brief statements of some new cases treated, with a summary of the results obtained in all cases treated of which I have memoranda.

Of the first ten cases reported, eight are now dead, one is apparently well and one has disappeared from under observation. Of the eight cases that have died, seven without doubt died of tuberculosis and one, after years of health, died of some acute abdominal trouble which developed during the lying-in period and which may have been tubercular. Thus it will be seen that ten cases which two years after the beginning of treatment gave the basis of a favorable report, after eight years, make a very gloomy showing. Expressed in percentages, the best that can be claimed, is 10 per cent. recovery, or if the case which died of intercurrent disease is counted as cured, 20 per cent. recovery with 80 or 90 per cent. mortality. It must be stated, however, that some of the cases that died gave up treatment probably earlier than they should have done and that the result might have been different in some if the treatment had been continued for a longer period. Of the five additional cases reported in 1892, two are dead, one is well, and two have passed from observation. Of the last two one is probably dead and one is probably well. This set of cases will show again almost the same result as the first ten.

Summing up the result of the fifteen cases, I can state positively that ten are dead, two are well, and three have passed from observation. Of these three, two are probably dead and one is probably well. The best that can therefore be claimed for the fifteen cases after a period ranging from five to eight years is about 20 per cent. recovery.

It will be of some interest to give a few details about these cases and I will therefore very briefly refer to them in numbers and state the course and termination of each case.

Case 1.—This case, which was especially interesting because of a local tuberculosis in the eyelid, in addition to the deposit in the lung, had recovered entirely, both of the local trouble in the eye and of the deposit in the lung. After recovery she had an acute attack of insanity, for which she was sent to an asylum for a brief period, but from which she entirely recovered. Subsequently she got married and had three or four children, remaining perfectly well during all of this time. Shortly before the termination of her last pregnancy she tripped and fell, bringing on labor somewhat prematurely. During her lying-in period she developed abdominal trouble, which, judging from the data given me by a member of her family, may have been tubercular, and from which she died.

Case 2.—A school boy who had had the disease in a very acute form, was apparently entirely well at the end of six months. He remained well for a considerable period. He seriously objected to the annoyance of inunctions and refused to continue the treatment, although I urged it, because he was much exposed to reinfection by reason of other cases in his family. At the end of about a year he again developed an acute attack which ran a very rapid course and proved fatal.

Case 3.—A sister of Case 2 was far advanced in the disease when the treatment was begun, but showed, probably better than any other case, what can be accomplished under adverse circumstances by persistent and uninterrupted treatment. Her environments were the worst possible and her duties were of a character most depressing and wearing. All her family had either died of tuberculosis or were dying of it, except one decrepit brother who had had spinal disease and was entirely crippled. Living in a small badly ventilated house in one of

the blind alleys of our city, with poverty ever abiding in her household, she was compelled during her entire illness, covering a period of about five years, to do all the work for her family, which always included one or two invalids, and besides she had the anxiety of mind which must often come with an empty larder. In spite of all her difficulties she used the inunctions daily and so pinned her faith to them that she declined to use any other treatment. Although her disease was always of a rather acute nature, she frequently having a high temperature while at the wash tub, she continued at her duties until the last, and lived about five years from the beginning of her disease. This is the more remarkable as almost every part of her body was affected with the disease, she even having large spots of lupus on her hands and fingers.

Case 4, 6, 7, 8, were reported dead in my last report and therefore need not be further spoken of here.

Case 5 gave up the treatment after having improved very much, but not having regained his health entirely, sought relief elsewhere and subsequently died of the disease.

Case 9 continues in good health up to the present time. The disease was entirely incipient with her and being so it is but fair to say that the diagnosis was somewhat in doubt. Clinically, however, she had all the symptoms of tuberculosis, so that it is proper to count her case in summing up the results of treatment.

Case 10, disappeared from observation, but I am inclined to think has since died.

Case 11 recovered so entirely after the first attack that I began to doubt my diagnosis. Within a year however, he had a recurrence for which he again came to me for treatment and from which he again apparently recovered. I then urged him to keep up his treatment indefinitely, but he only did so until he felt quite well. He subsequently had tubercular fistula when he again took up the treatment for a short period with good results and apparent recovery. About a year ago he developed the disease in acute form for which he sought some other method of treatment and from which he never recovered.

Case 12 is at present entirely well. Her symptoms were somewhat acute in the beginning and the case looked unfavorable owing to the fact that she had involvement of the lymphatic glands in addition to the lung trouble. She has, however, not only recovered from her lung trouble but the glands have gone down to the normal condition.

Case 13 was of an acute character and when last heard from had a relapse while in the South where he had gone with a view of benefiting himself. In all probability he has since died.

Case 14 was improving under my treatment when I last saw her, but for a second time discontinued the treatment believing, in all probability, that she was well enough to get along.

Case 15 was entirely well when I last saw her some years ago. As she had been coming to me off and on when she had any fear of recurrence, I have reason to believe that is now well.

Of new cases that I have treated and that have shown some evidence of permanent improvement or cure I will now quote a few.

Case 16.—Male, aged about 28 years, white, was admitted to the Rush Hospital for consumptives May 17, 1892. At time of admission he had consolidation of upper lobe of one lung; had an annoying cough; some slight elevation of temperature; and gave a history of having lost about 40 pounds in weight. He was given a tonic, placed on iodoform inunctions and given nutritious food and a large quantity of milk daily. Under this treatment the lung cleared up and the cough disappeared, and he rapidly gained in weight so that at the end of three months he was discharged well and with a gain of 25.5 pounds. I have made inquiry about this case since and have had knowledge of him within a year, at which time he continued to be well.

Case 17.—Male, white, aged about 25 years, was admitted to the Rush Hospital for Consumptives early in 1892. He had been exposed to tuberculosis in his own family at home for a considerable period and was apparently laboring under an acute attack. He was thin, pale and delicate looking, and seemed to be a most unpromising case for treatment. The deposits in his lungs were not localized, but were apparently scattered in small patches over both lungs. He had had hemorrhages and his cough was almost constant. There were bacilli in the sputa. He was placed on tonic treatment with good food and plenty of milk and given inunctions of iodoform solution daily. For a long time there was no improvement in his case. He had most severe hemorrhages during his stay in the hospital, during one of which he was almost completely exsanguinated and was watched for death for several days. After about three months, however, he began to improve and at the end of six months was discharged with the disease apparently arrested. I have seen

him repeatedly since his discharge and quite recently, and he has remained well, although he has subjected himself to the severest tests, such as exposure to hardships and to such conditions as are usually looked upon as conducive to tuberculosis. He has moreover been exposed to contagion in his own home since then, as his father has developed tuberculosis, and he is in constant association with him.

Case 18.—Female, white, aged about 50 years, married, mother of a large number of children, came under treatment in the early part of 1891. She then gave a history of having had a cough for a long time which had been worse at certain intervals. When I first saw her she stated that she coughed a great deal at times; that she spat a large amount of green sputa; that she was pale at intervals; that she had a very poor appetite; and that she believed all these symptoms to be due to an attack of "grip" which she had had a year previous. The physical signs showed the presence of small deposits scattered all over the lungs, probably along the bronchial tubes, but no large deposit in any one place. An examination of sputa showed the presence of a very large number of tubercle bacilli. She had considerable variation of temperature and considered herself quite ill. I placed her on inunctions of iodoform in cod liver oil, gave her creosote internally and gave her phenacetin and quinin for her fever. She improved very slowly under this treatment, but yet the improvement was perceptible from month to month. In the early summer she was able to go to the seashore, where she continued to improve, and when she returned to the city her pulse was normal, her temperature normal; she had a fair appetite, had gained some in weight, not a great deal; coughed very little and spat scarcely any. Although not well, she believed herself to be in good condition. After that she enjoyed fair health, but had recurrences of exacerbations of cough, and I believe that she is still enjoying fair health, although I have not seen her recently.

Case 19.—Female, white, aged 70, mother of large family, came under treatment for a cough in September, 1892. She had had in recent years several sons die of tuberculosis and she had just nursed one during a long confinement to his room, where she had been his constant associate. Her cough came on shortly after her son's death, and upon physical examination it was found that she had almost complete consolidation of the apex of one lung extending below the angle of the scapula. I gave her tonic treatment and placed her on inunctions of iodoform. In order that she might have the benefit of climate in addition to what could be gained from therapeutics, she went to Florida in the fall and spent the winter there, during which time she continued the inunctions. When she returned to Philadelphia during the following April the condition of her lungs was very much improved. She continued treatment and spent the hot months of the following summer in the Pocono Mountains. At the end of a year's treatment her lung had apparently entirely recovered and all symptoms of the disease had disappeared. She has remained entirely free from tubercular symptoms since, although she has recently died from disease which may possibly have been tubercular. It is worth stating that this person was a most pronounced subject of gout and had been so from early life, and that the gouty diathesis may have played some part in her recovery.

Case 20.—Female, white, aged about 25 years, teacher, was taken sick with a hemorrhage during the summer of 1892. She had had a brother die of tuberculosis shortly before that time. She had consolidation of the upper lobe of one lung, from which no doubt the hemorrhage came, and had quite a severe cough. At the same time she had a pelvic trouble which looked as though it might be tubercular. I put her to bed and placed her on iodoform inunctions and gave her creosote internally. She improved rapidly and went away to the country for a short time in the latter part of the summer, while she continued her treatment. In the fall she resumed her duties as a teacher and continued the inunctions. The lung cleared up entirely and the pelvic symptoms disappeared after about six months' treatment. About a year subsequently she had a second mild attack, from which she also recovered and she has since remained well and is at present following her vocation as a teacher.

Case 21.—Female, white, aged 23 years, employed at book-binding, first developed a cough in the early part of 1892. She had been exposed to tuberculosis in her home by reason of her father and sisters suffering from the disease for several years. Physical examination revealed consolidation of the upper lobe of the left lung and she had the tubercular variations of temperature. I placed her on iodoform inunctions with tonics and treatment for temperature. She improved rapidly and recovered so far that scarcely any physical signs of lung disease could be detected upon the most careful examination. She

returned to her work, believing herself well, and declined to have further treatment. She remained well until the spring of 1894, a period of two years, when she again developed a cough, and upon physical examination I found consolidation of the base of the left lung. She again had temperature variations, and this time some expectoration in which tubercle bacilli were found. The treatment with iodoform was resumed and she was kept under observation continuously, but in spite of everything that could be done the case took on an acute form and in the course of three or four months came to a fatal issue.

Case 22.—Female, white, aged 25 years, teacher, first developed tuberculosis about 1892, and came under treatment in September of that year. She had been exposed to the disease by helping nurse her father. When I first saw her she had consolidation of the apex of one lung with a very annoying cough, some variation of temperature, loss of appetite and accompanying loss of flesh. She received tonic treatment and iodoform inunctions with creosote by the mouth. The deposit broke down and a cavity formed. At this time the larynx became slightly involved, for which she received special treatment by Dr. Harrison Allen. She continued her inunctions at intervals, ceasing them when she believed herself better. When last seen, which was quite recently, she was enjoying good health, but still had a cough, a secreting cavity and some bacilli present in the sputa. Otherwise, however, she is apparently enjoying good health and I believe that, could she be induced to use her treatment regularly and persistently, she would recover entirely.

Case 23.—Female, white, married, aged 41 years, developed a cough September, 1892, which, although not alarming, aroused the suspicions of her brother, who was a physician, because it was accompanied with symptoms of lassitude and some loss of flesh. As the cough persisted, repeated careful examinations were made of the lung and it was finally discovered that there was an area of dullness along the spine between the spinal ridge and the shoulder blade, high up on the right side, indicating an enlarged bronchial gland. After a while this gland broke down, and the discharged pus revealed the presence of many tubercle bacilli. The case was placed on iodoform inunctions and large doses of creosote, with such tonic treatment as would suggest itself from time to time. Although the case was a most unpromising one, under the attention and close watching of her brother, who forced her nutrition in the most judicious manner, she improved, and the abscess which formed in the bronchial gland apparently healed up without any new deposit having formed anywhere in the lungs. The treatment was persevered in for about eight months, when a change of climate was determined upon. The case continued to do well and the patient has since traveled in Europe, apparently in good health. Occasionally symptoms occur which give some ground for solicitude, but to all appearances she is well.

Case 24.—Female, white, aged about 18 years, was taken with a slight hemorrhage in the fall of 1892. Physical examination revealed very little abnormal in the lungs, and the health of the patient was not much affected. Shortly thereafter, however, more active symptoms set in, and it was clear that there was a deposit in the apex of one lung. The young lady had during the year taken a trip on a sailing vessel with a consumptive friend, and was on most intimate terms with her. Under iodoform inunctions and tonic treatment, and with forced nutrition, she improved very rapidly, and during the summer of 1893, almost entirely recovered her health in the Pocono region. During all this time she faithfully used the inunctions of euophen. Early in 1894 she went South with a view of escaping the severity of the northern winter, and while there had a severe hemorrhage which was followed by most acute symptoms which necessitated her being brought home. She died of acute tuberculosis shortly after her return.

Case 25.—Female, white, aged 18 years, the only child of a wealthy man. Mother and only brother had died of tuberculosis some years before. She had had a slight attack of influenza, during the convalescent stage of which her father took her to Florida, from whence she returned after some time with a persistent cough and some indisposition, accompanied with daily rise of temperature. A throat specialist was consulted, who for a while treated her for laryngeal trouble. She came under my treatment in May, 1893, when I found that she had consolidation of the apex of one lung, with symptoms of beginning tuberculosis. She had been losing flesh rapidly and was in a depressed, feverish condition. Under inunctions of iodoform and rest in bed she recovered from the acute symptoms in about four weeks, and was in proper condition for removal to the Pocono region. The treatment was continued and she rapidly recovered her health. Her temperature became normal, her pulse became normal, and although a small cavity had formed, resolution took place in the lung to such a degree that

very few physical signs of disease could be detected. By December of that year she presented the appearance of a young woman in perfect health and was able to endure a large amount of physical effort without fatigue. She had gained about 30 to 35 pounds and weighed 150 pounds. There being some difference of opinion in the selection of a winter climate, the case now passed from under my treatment. In a warm, enervating climate acute symptoms again set in, which led to a fatal termination at the end of about six months.

Case 26.—Male, white, aged 40 years, was taken sick with acute symptoms of tuberculosis during the early part of 1893. He had had a brother die of consumption six years before, and had himself had a cough, off and on, for six years prior to that date. He came to see me because of a hemorrhage which he had recently had. I found consolidation of the upper lobe of the left lung and all the typical signs of tuberculosis. I placed the patient on iodoform inunctions and tonic treatment, and gave him gradually increasing doses of creosote. He improved under this treatment, which he persevered in conscientiously, and recovered his health to a very great degree, but never got entirely free from cough. By the summer of 1895 he had reached as high as 160 pounds in weight and presented the appearance of good health. He continued his treatment, however, with short intermissions, and maintained a pretty even standard of health until the spring of 1896. At this time, after losing weight for a few weeks, he quite suddenly developed an acute form after an attack of influenza, and was confined to his bed and lost weight very rapidly. The symptoms were so severe and his emaciation so rapid that it looked as though he must necessarily die. He persevered faithfully with his treatment, however, and made desperate efforts to force his nutrition even during the severest part of his illness. During the three months that he was confined to his room he dropped from 141 pounds, to which he had already been reduced before going to bed, to 125 pounds. He again began to convalesce, however, and to rapidly gain in weight, and by July of that year, less than two months after getting up, he again weighed 141 pounds, and by December had reached 167.5 pounds. At present, although he has recently had an attack of influenza, he is enjoying fair health and is attending to his business. He is, however, not entirely well, as bacilli were still present in his sputa when last examined, and he is of course in danger of an extension of the disease at any time.

Case 27.—Female, aged about 50 years, white, single, began to show symptoms of tuberculosis in the early part of 1892. Had nursed a sister with tuberculosis, and not knowing the disease to be contagious, had taken no precautions. She had been a woman of delicate health for years and was, in her normal condition, very thin and spare. She had a deposit in the apex of one lung, a slight cough, but no acute symptoms. Under iodoform inunctions and a tonic treatment she improved very much in health and gained quite a good deal in weight. She improved so much, indeed, that doubts began to arise in the minds of her friends about her ever having had tuberculosis, and in fact, I was myself beginning to have some doubts about my diagnosis. This improvement continued during 1892 and the greater part of 1893. The inunctions, being found rather irksome, were discontinued, but the tonic treatment was kept up with occasional intermissions. In the spring of 1894 a recurrence of the disease took place which left no doubt of the diagnosis, as the disease manifested itself in a rather acute form. The inunctions were again resumed with some improvement, but the disease was never again brought under control. In the fall of 1894 the patient became confined to the house, and died in December, 1894.

Case 28.—Male, white, aged about 19 years, came under treatment for cough and slight fever in the early part of 1894. He had had one sister and one brother die of tuberculosis in recent years, was poorly nourished, rather anemic and presented the appearance of being a bad subject for the disease. He gave a history which raised the question of syphilitic infection, so that there is some doubt about the diagnosis. The symptoms, moreover, were not typical of tuberculosis and it was never possible to outline any definite involvement of the lung. He had, however, loss of flesh, elevation of temperature and pulse above the normal, all of which symptoms indicate tubercular deposit. Under treatment with iodoform inunctions with occasional rest in bed, tonics and forced nutrition he rapidly recovered. By the middle of 1895 he was apparently in good health. He has since enjoyed fair health and has had no recurrence of cough.

Case 29.—Male, white, aged 52 years, came under my treatment during the latter part of 1894. He was then in the third

¹ This patient has died of acute peritonitis, after a few days' illness, since the reading of my paper. Unfortunately, an autopsy was denied me.

stage of tuberculosis, having suffered from the disease for several years. His lungs were so generally affected that I did not expect him to live long and gave the most unfavorable prognosis. I, however, placed him on inunctions of euophen, put him to bed, gave him creosote and tonic treatment. Greatly to my surprise he improved, gained weight and recovered sufficiently to again be able to go out and be about. His expectoration decreased very materially, his cough lessened, and while he did not recover entirely, he regained a condition of health which enabled him, according to his ideas, to discontinue the services of his physician. I have seen the man recently and he is still enjoying about the same health he had when he discontinued his treatment. His case is remarkable because of its improvement when it had apparently advanced to a fatal condition.

Case 30.—Female, white, aged about 40 years, came under my treatment in the early part of July, 1894. She had been delicate all her life and had believed herself to be the subject of tuberculosis years before, but the symptoms which she related would indicate that her fears were ungrounded. The present attack came on after influenza and manifested itself by consolidation of the upper lobe of the right lung, persistent cough and slight elevation of temperature. Under inunctions which were practiced for a long time and tonic treatment the cough disappeared, the lung cleared up and to all appearances the patient got perfectly well. This condition of health continued until the spring of 1897, when she again had an attack of influenza which left the upper lobe of the right lung consolidated. She at present is again under treatment with the euophen inunctions and is improving, although the lung has not yet cleared up and she still has the rapid pulse so typical of tuberculosis.

Case 31.—Female, white, aged about 12 years, had been exposed to tuberculosis in the latter part of 1892 by the presence in her parents' home of an uncle who died there from the disease. She developed the first symptoms about May, 1893, when she began to lose flesh rapidly and had a persistent cough and fever. Clinically her case was typical tuberculosis in the first stage. She was placed upon euophen inunctions and given a tonic. Although her symptoms were so acute that I was induced to give an unfavorable prognosis, she improved very rapidly under the treatment and by September was nearly well. I have heard from her quite recently and she is now enjoying perfect health.

Case 32.—Female, white, aged about 32 years, unmarried, contracted tuberculosis from a sister who died of the disease. She came under treatment in the early part of 1895. When I first saw her she gave a history of having coughed for some years during the winter season without much affecting her health. She had not lost much weight recently and at the time weighed 129 pounds. She had cavities in the apex of the left lung and the presence of tubercle bacilli in the sputum. I gave her tonics, creosote in hot water before meals and directed her to use iodoform inunctions. She improved rapidly and by fall weighed 150 pounds. I increased her creosote gradually until she was taking 35 drops three times a day at the end of a year's treatment, when she weighed 161 pounds and presented the appearance of perfect health, although she still continued to cough and had bacilli present in the sputum. During the spring of 1896 she had a slight extension of the disease, owing to an attack of influenza, which reduced her to 150 pounds in weight and otherwise very materially retarded her progress toward recovery. She continues under treatment at the present time and presents the appearance of good health, weighing 167½ pounds, the highest point reached, but still has bacilli present in the sputa. The bacilli, however, are few in number and show degeneration.

Case 33.—Female, white, Italian, unmarried, aged about 25 years, came under my treatment in January, 1895, having been recommended to me by a fellow practitioner under whose care she had been for a year. She was at that time in bed, having been confined there for some weeks and was laboring under an acute form of tuberculosis which had advanced to the third stage. She had fever, sweats, annoying cough, considerable expectoration and had had some hemorrhages. Her prostration was great and her mental condition was so disturbed as to suggest the possibility of meningial involvement. Physical examination revealed that the pulmonary trouble was pretty well confined to one lung, although in an active condition. Without hope of improvement I placed her on euophen inunctions and forced her nutrition all I could. Much to my surprise she improved so that during the spring she was able to sit up, and early in the summer was able to go out. She continued her treatment, and at my suggestion went into the pines of New Jersey during the hot summer months and lived out of doors as much as possible. She returned in the autumn very

much improved, having gained a great deal in weight and being entirely free from acute symptoms of the disease. The condition of her lung also showed marked improvement. Having heard of Maragliano's new treatment, and having met an Italian physician who had imported some of the serum and who was in a position to administer the treatment, she decided to take it and informed me of her decision. After a few weeks' treatment with the serum she had a severe hemorrhage, from which she died.

Case 34.—Female, white, unmarried, aged 35 years, came to me for treatment during the summer of 1895. She gave a history of a hemorrhage six years before followed by occasional attacks of coughs and delicate health. A recurrence of the hemorrhage took place about eight months prior to seeing me, after which she continuously had a cough, which had become much severer a few weeks prior to her coming under my treatment. When I first saw her she had acute symptoms of tuberculosis in the third stage, and physical examination revealed a large cavity in the right lung to below the angle of the scapula. There was also a deposit in the apex of the left lung. Her case looked very unfavorable, but its long resistance showed excellent resisting power and gave encouragement for treatment. She was, however, very much emaciated, only weighing 101½ pounds. I placed her on euophen inunctions, gave her creosote before meals and tonic treatment consisting of pepsin, hydrochloric acid and strychnia after meals. She improved very rapidly and went away from the city during the summer. When she returned in October she weighed 110½ pounds, was nearly free from symptoms indicating active condition of her disease, except that her pulse was accelerated, but considered herself very much improved. She continued her treatment, although less regularly, and in January, 1896, she was still in very good condition. She continued so well that she stopped her treatment. Quite recently, however, she has had a recurrence of the disease, for which she is now under treatment.

These are some of the cases that came under treatment at an earlier period than two years ago, and that were under treatment long enough to have given a fair opportunity to judge the results. Of the cases that came under treatment within the last two years, many show excellent results, but I will quote only a few.

Case 35.—Male, white, aged about 18 years, had been exposed to tuberculosis in his own family, from a sister dying of it. He was taken down during the summer of 1896. His first knowledge of his illness was by a hemorrhage which was rather severe and which was followed by cough and by much weakness. He had not yet lost much flesh, but became very pale and showed the presence of anemic murmur of the heart. Physical examination did not reveal much wrong with the lungs, although there was impaired resonance in one apex. After a very short time, however, dulness over the apex appeared and prolongation of expiratory murmur. Believing the disease to be tubercular, I placed him on inunctions of euophen and gave him a tonic treatment. He rapidly improved, gained some in weight, and by the end of the year was free from all symptoms of the disease as far as could be determined by physical examination. He continued his treatment, however. During the spring of 1897, he again had some exacerbation of his disease, as manifested by acute symptoms brought on by an attack of influenza, but at the present time he is enjoying fair health and promises to recover.

Case 36.—Male, white, aged 37 years, living in the Allegheny Mountains, contracted tuberculosis while nursing his wife who died from the disease in the early part of 1896. He had no family history of tuberculosis and had always enjoyed good health up to the time of his wife's fatal illness. When he consulted me he had been under treatment for some months with his family physician, and showed acute symptoms of the disease, but no evidence of having advanced beyond the first stage. He had had a recent hemorrhage and acute symptoms of pleurisy. Physical examination revealed a right sided chronic pleurisy with involvement of the apex of the lung. I recommended forced nutrition, the use of euophen inunctions and a tonic treatment. Upon his return home he began this treatment and several months afterward wrote me that he had entirely recovered his health, having regained all his lost weight and being free from cough and pleuritic symptoms.

Case 37.—Male, white, aged about 30 years, had been under treatment for four months before coming to me, during which time he believed himself to be constantly growing worse. He consulted me early in March, 1897, when he was laboring under a semi acute attack of tuberculosis, the deposits being scattered and there being probably a small cavity on the right side, which gave off a very large number of bacilli. He was

very hoarse. An examination of the throat, by Dr. Harrison Allen, revealed a congested condition of the larynx and an ulcer in one nasal passage. At this time he weighed 141½ pounds. Under inunctions with euophen; creosote, pepsin and hydrochloric acid by the mouth, he has rapidly improved so that at present he is almost free from cough, expectorates very little and weighs 160½ pounds.

Case 38.—Female, white, aged 23 years, came to my office for treatment in February, 1897. He gave a history of having been delicate since childhood, and of having suffered from her present illness for a year, during which time she has been under treatment. The cold from which she believed herself to be suffering had continued for a month prior to seeing me. At the time of her first visit she was laboring under a semi-acute attack of tuberculosis, with a small cavity, in the discharges from which there were tubercle bacilli. She weighed 93 pounds. I put her on inunctions of euophen; creosote and pepsin and hydrochloric acid by mouth. She has constantly improved since and at present is in very fair condition, weighing 97½ pounds.

A résumé of the cases that I have treated by this method during the last eight years will probably give the best picture of what can be expected from it. In order that the lesson may be the more practical I will divide the cases into classes:

TABLE 1.—Cases that came under treatment longer ago than two years.

Number of cases	77
“ “ now dead	38
“ “ now living	19
“ “ lost track of (probably living 11, probably dead 9)	20
Total	77

TABLE 2.—Cases that came under treatment within two years.

Number of cases	25
“ “ now dead	9
“ “ now living	9
“ “ lost track of (probably living 5, probably dead 2)	7
Total	25

TABLE 3.—Cases that were under treatment for a longer period than two months.

Number of cases	69
“ “ now dead	33
“ “ now living	26
“ “ lost track of (probably living 4, probably dead 6)	10
Total	69

TABLE 4.—Cases that were under treatment less time than two months.

Number of cases	33
“ “ now dead	14
“ “ now living	2
“ “ lost track of (probably living 7, probably dead 7)	14
Total	33

TABLE 5.—Cases that were in the incipient stage when they came under treatment.

Number of cases	27
“ “ now dead	7
“ “ now living	12
“ “ lost track of (probably living 7, probably dead 1)	8
Total	27

TABLE 6.—Cases in breaking down stage when they came under treatment.

Number of cases	75
“ “ now dead	40
“ “ now living	16
“ “ lost track of (probably living 9, probably dead 10)	19
Total	75

TABLE 7.—General results.	
Number of cases treated	102
“ “ now dead	47
“ “ probably dead	11
Total number of deaths	58

Number of cases now living	28
“ “ probably living	16
Total number living	44
Grand total	102
TABLE 8.—Detailed results.	
Number of cases treated	102
“ “ probably dead	11
“ “ now dead	47
Number of cases cured, that is, entirely free from all evidences of disease	58
Number of cases of disease arrested, that is, in good condition of health, but evidences of disease still present	15
Number of cases improved, that is, who attained a fair condition of health, but with no prospect of permanent improvement	16
Total	15
Number who died of intercurrent disease	104
Total number treated	2
	102

The conclusions that I believe myself justified in drawing from this eight years' experience in the treatment of tuberculosis with iodoform and euophen are: 1. That incipient cases can almost always be cured by euophen or iodoform inunctions. 2. That cases advanced to the breaking down stage may be improved very much by this method of treatment and can sometimes be cured. 3. That the treatment ought to be continued even after acute symptoms have disappeared, and that it should be maintained until perfect health is reestablished.

As to the respective merits of euophen and iodoform, from a therapeutic point of view, both have apparently done equally well in my hands as far as the results are concerned. From an esthetic point of view, the euophen is much to be preferred because it is much less offensive in odor, and can be almost perfectly disguised. I have for almost a year discarded the use of iodoform. The formula which I now employ is as follows:

Euophen	1 dram
Oil of rose	1 drop
Oil of anise	1 dram
Olive oil	2½ ounces

This makes an excellent preparation, giving a perfect solution and being in no wise offensive to the sense of smell. I instruct my patients to rub about a tablespoonful thoroughly into the inside of the thighs and into the arm-pits before retiring at night, and if they have any fear of odor, to sponge themselves with bay rum or bath whisky when rising in the morning. By following these instructions the most fastidious can satisfy themselves that they will not attract attention in public. The treatment is somewhat troublesome, but patients when they once discover that they are deriving benefit from it, not only do not object to its use, but are anxious to employ it. I have had very little trouble on the score of getting patients to persevere with the treatment during the acute or sub-acute stages of their illness, but only when they have apparently recovered their health. Most people settle for themselves the question whether or not they are well, and I find that when consumptives begin to enjoy a fair state of health they do not care to any longer submit to a troublesome treatment.

It is but proper for me to say further that the majority of cases that I have treated in this way and upon which I base this report, were among the poor and never had the advantage of climate, or of even temporary removal from the city. Indeed, many of them

did not even have the home comforts and the advantages in food which are so important in the treatment of tuberculosis. The results ought therefore to be judged upon a basis of unfavorable environments, for which reasons, in comparisons with other results, some allowance ought to be made. I have no doubt that in sanatoria favorably located, much better results could be obtained by this treatment.

I have long since been convinced that it is the iodine which gives the good results, and that the advantage of using euophen or iodoform through the skin lies in the fact that an even and continuous influence can be maintained on the blood by the gradual absorption of the drugs and the giving off of the iodine in the blood or tissues. I must confess that I have arrived at these views largely by exclusion, because they are the only ones tenable with our present knowledge of the etiology and pathology of tuberculosis. When tuberculosis has once advanced beyond the first stage it is only curable by the establishment of an immunity against new colonies of the tubercle bacillus. This is so because, when the circulation is once cut off from the existing deposit, cure can only take place by either getting rid of that deposit, or by walling it in. Usually nature makes an effort to get rid of the deposit through the process of degeneration and ulceration through the healthy tissues. But inasmuch as the germs have to pass through the healthy tissues when the broken down tissues are being thrown off, reinfection is almost certain to take place unless the individual possesses an immunity which makes it impossible for the germs to again find proper soil for development. This immunity must, moreover, be constant and sufficiently permanent to maintain an incongenial soil until all the germs have been ejected from the organism. The iodine which is given off from the euophen and iodoform into the circulation after its absorption by the skin maintains, I believe, to a certain degree, an immunity which makes new colonization difficult and in this way contributes toward a cure.

Where tuberculosis is still incipient, and where the circulation has not yet been cut off from the nodules, I believe that the iodine, when brought into the system through the euophen or iodoform inunctions, will almost invariably cure. Of the cases of this description that I have treated, most have recovered, although a number had relapses and subsequently died of acute tuberculosis. Some of these cases, however, were constantly exposed to reinfection from other members of the family and may have contracted new attacks.

It is but fair to say that an incipient case of tuberculosis is an unconfirmed case as far as diagnosis is concerned. The diagnosis in incipient cases must necessarily depend upon clinical symptoms, as there is not yet any broken down tissue and there is no possible way in which the tubercle bacillus can be demonstrated. The clinical symptoms of tuberculosis are, however, sufficiently striking and well enough defined to allow of a rational diagnosis. Where we have a rapid pulse, a daily rise of temperature with impaired resonance, or partial consolidation of a part of a lung, with prolongation of the respiratory murmur, there can be little doubt about the nature of the disease which the person is suffering from. We know, moreover, from past experience that persons in this condition, if allowed to go on without treatment, invariably develop into full-fledged consumptives. While there is, therefore, some doubt about the diagnosis of the

cases which I have quoted as incipient, they must be accepted as representative cases of their kind and must be allowed to pass as a basis for the conclusions which I have given.

It is proper for me to say, in conclusion, that much of the benefit which I have had in the treatment of the cases quoted in this paper was no doubt due to tonics and creosote. As indicated throughout the paper, I have used creosote in large doses in all cases advanced to the breaking down stage. In such cases I think better results are obtained by using both creosote and euophen than by using either drug alone.

OXYTUBERCULIN IN TUBERCULOSIS.

Read by title in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY J. O. HIRSCHFELDER, M.D.

SAN FRANCISCO, CAL.

Ever since Behring introduced the antitoxin of diphtheria into medical practice, the attention of the profession has been directed to the discovery of a similar mode of treatment for all the other infectious diseases. We have a right to assume that the law of the antitoxins is one of general application, and that that observation which is true of one bacterial disease is true of all. Efforts, however, to produce antitoxins of other diseases than diphtheria, have not led to the striking results obtained in that disease. Various observers, first among them being Paquin in our country, and last Maragliano in Italy, have used serum of animals supposed to have been made immune to the bacillus tuberculosis, but the results, to say the least, have not equaled those in diphtheria. The association of the antitoxic principle with various other ingredients of the blood serum, has led to unpleasant results that have thrown discredit on the method, and have rendered it impossible to use the remedy in effective doses. As we certainly know that the antitoxins are elaborated, in the animal organism, from the bacterial toxins, it is not unreasonable to believe that such an alteration might be effected in the laboratory. Attempts have been made, through electrolysis, to convert the toxins, and have led to encouraging results in the hands of Smirnow, d'Arsonval and Charrin, as well as some others; but no practical application of the method has yet been made. None of the theories formulated to explain the production of the antitoxins has been universally received, nor has chemic analysis given data to permit us to recognize a difference between the toxins and the antitoxins, otherwise than through their biologic effects. The theory that the oxidation of the toxins leads to the production of an antitoxic substance, which I enunciated in August, 1896, is one that has in it an inherent element of probability, independent of clinical demonstration.

My experiments have been conducted mainly with the toxin of tuberculosis, and have led to verification of the hypothesis, in the experimental as well as in the clinical domain.

As stated in previous publications, I have produced this oxidation by the action of the peroxid of hydrogen at 100 degrees C. The method has been to filter a sterilized fully grown culture of the bacillus tuberculosis upon alkaline glycerin veal bouillon, and to add one-tenth the volume of ten volume solution of peroxid of hydrogen to such tuberculin; to maintain the mixture at 100 degrees C. for twelve hours, then to add the same quantity of the peroxid, and to repeat