persistence in the treatment perhaps throughout the patient's life.⁸

TREATMENT.

I must confess myself decidedly of the party of those who believe that large doses of iodide of potash and mercury are often necessary in the treatment of the late nervous lesions of syphilis, though I must confess that the reasons for my opinion are rather inferential than positive.

Many patients do perfectly well on moderate doses, it is true, and for them possibly enough is as good as a feast. On the other hand, I am convinced that from time to time I have seen patients improve on doses of a drachm or 100 grains of iodide of potash three or four times daily, who had not done as well on smaller doses, and I have seen patients at the hospital that I did not care to trust with large doses, fail to do as well as I thought they ought.

Again, what I think should count of practical importance, I have never seen large doses, properly watched, do any irreparable harm.

In the case of one patient with syphilitic myelitis whom I was seeing daily, and whose prospects of leading a life of invalidism would have made him willing to incur almost any risk, I gave by gradual increase, up to nearly ʒij. of iodide daily, and then for the first time signs of poisoning on the part of the nervous system appeared, which were at first rather alarming, but quickly subsided. I believe that even larger doses than this have occasionally been used. The same patient has been taking now for several years ʒss. or more, daily, for at least half the time, with constant improvement in his nutrition.

RELATIONS OF SYPHILIS TO LOCOMOTOR ATAXIA.

I have notes of fifty cases of locomotor ataxia in which mention is made of the presence or absence of a chancre *judged mainly* by the patient's admission or denial. Of these there was a history⁹ of primary infection in twenty-nine cases (male 27, female 2), and secondary symptoms were present, without history of primary infection, in two, and somewhat doubtful symptoms in a third (a female); making in all about sixty per cent. of syphilitic or possibly syphilitic cases. In ten others gonorrhœa was admitted, but syphilis denied, a history which means, at the least, possible exposure to the causes of syphilis.

These figures corroborate the statements of other observers, that there is a close circumstantial bond between syphilis and locomotor ataxia. The nature of this bond no one has been able to discover, but if it proves true, as a few observations seem to indicate, that anti-syphilitic treatment is occasionally effective in bringing about a cure, it will show that the connection is at least occasionally a direct one.

My own experience in this direction, like that of the majority of observers, has hitherto been negative.

⁸ On the reading of this paper attention was directed by a member of the Society to the importance of ascertaining, in cases of syphilis of the nervous system, whether the primary lesions had received thorough treatment or not. This inquiry has not been systematically made, but it may be assumed that in the case of the hospital patients there had almost never been a thorough primary treatment, and my knowledge of the history of the private patients enables me to assert the same with regard to the majority of them. The reader's attention is at the same time especially invited to the remark of Dr. J. C. White, (Boston Medical and Surgical Journal of Oct. 7, 1886), that he had seen serious nervous symptoms arise in patients who had been steadily under his own observation and under thorough treatment for upwards of two years following infection.

⁹ It is of course probable that the original diagnosis was incorrect in some cases, but these would probably be counterbalanced and more by the cases of mistaken denial of infection.

It may well be that some of the cases, though presenting the usual symptoms of locomotor ataxia, really belong in another category. Thus, three of the thirty-two patients had shown symptoms of cerebral syphilis, in addition to the spinal symptoms, and with one of these, a woman, the anti-syphilitic treatment seems to have affected the spinal symptoms favorably.

If any advantage is to be obtained by such treatment it probably needs to be thorough and prolonged, instead of incomplete and temporary, as the temptation is to make it.

Strangely enough, the other chronic scleroses of the spinal column do not seem to be, with anything like the same frequency, of syphilitic origin, and yet it does appear to act as one of their occasional causes.

Thus I have seen several cases of multiple sclerosis for which previous syphilis was a possible and the only discoverable cause.

A case of this kind has recently been carefully described by Schuster, in which anti-syphilitic treatment is said to have affected a cure.

Quite as common a cause as syphilis of some forms of spinal sclerosis is chronic lead-poisoning, as I have shown before this Society and elsewhere.

Post-mortem examinations have not as yet shown anything characteristic in the lesions of syphilitic locomotor ataxia.

In a case of my own where the presence of the early and secondary symptoms of syphilis were unquestionable, the spinal lesions did not differ from those ordinarily seen. The arteries in the substance of the cord were greatly thickened, but this may be found in simple tabes.

In conclusion, I beg to acknowledge the courtesy of my colleague, Dr. G. L. Walton, in permitting the use of his notes of cases treated at the Massachusetts General Hospital.

FATAL POISONING BY CHLORIDE OF ZINC APPLIED TO AN EPITHELIOMA OF THE LIP: WITH REMARKS.¹

BY ARTHUR H. NICHOLS, M.D.

On the 7th of January, 1886, I received an urgent summons to visit J. R., residing in Dorchester. In the month of June previous, this man, whose family I had for many years attended, presented himself for advice regarding an incipient epithelioma situated on the margin of the lower lip. The imperfect development of the growth seemed to render immediate surgical interference unnecessary, and delay was accordingly recommended. This advice did not prove satisfactory, and during the summer he put himself under the care of an irregular practitioner from Worcester, whose treatment proved wholly ineffective. Subsequently, attracted by a mendacious advertisement, and the reputed cure of a neighbor by another irregular physician from Lynn, the latter was called upon, and readily agreed to effect a prompt cure. To quote from this advertisement, now before me, the writer states that he has "a practice peculiarly his own, having never divulged it to any one." He furthermore alleges that "the medicine used is a vegetable liquid, and is a complete and effectual antidote for cancers and tumors, af-

¹ Read before the Boston Society for Medical Observation, June 7, 1886.

fecting only cancerous tissue. . . . In killing an ordinary cancer, he requires only from two to six hours, and the pain is so slight, a child can easily bear it."

Upon reaching the patient, about 7, P. M., I found him unconscious, respiration slow and stertorous; pulse 110, small and weak; pupils dilated and irresponsive to light; face flushed, and whole body bathed in cold perspiration.

It transpired that at 1, P. M., of that day, a son and partner of this physician, a young man of extremely limited professional attainments, had come to the house and persuaded the family that he was in all respects competent to conduct the treatment, having received the required instructions and remedial agents from his father. The patient's apprehensions were quieted with the assurance, reiterated in the presence of the family, that the medicines employed were purely vegetable, and that the pain produced would be insignificant. The lip was then treated with two different applications, the latter being left bound upon the diseased surface when the young man took his departure at the expiration of about an hour and a half. Three pills (containing, as was afterwards ascertained, one grain each of svapnia) were left, with directions to take them all in case of severe pain.

From the very outset, the patient protested that the pain induced by these applications was unendurable, and it gradually increased in intensity, extending beneath the chin to the neck. These complaints were treated with ridicule by the attendant, who assured him that the drugs used might be even *swallowed* with impunity—a statement which may be important, as tending to throw light upon the real cause of the accident which followed. At about 3, P. M., he complained of the region of the stomach, and soon after rushed to a rear door, seemingly to get fresh air. A violent chill now set in, associated with a numbness of the lower extremities, and a sensation of dizziness. He was then assisted to a lounge, and the plaster removed from his lip. Convulsive movements of the upper extremities now supervened, and he soon sank into a state of stupor, followed by coma, from which he could never after be aroused.

Medical aid was now sent for, and Drs. C. E. Stedman and W. C. B. Fildes were soon procured. The prominent symptoms observed by these gentlemen upon their arrival were stupor, retarded breathing, and unevenly dilated pupils; and under the influence of heat and stimulants, there was for a time marked improvement in both pulse and respiration, while the pupils regained their normal calibre. When it was ascertained, however, that the opiate pills had not been taken, it was deemed expedient to telegraph to Lynn, with the view of eliciting precise information as to the nature of the poison which was producing so profound an effect upon the nervous system. This message was responded to by father and son, who appeared upon the scene about 8.30, P. M. The latter, upon his arrival, was rendered rather incoherent by the ghastly appearance of the patient, now rapidly sinking, and he was shortly after led from the room in a demoralized state. The father succeeded in maintaining a better equilibrium, and volunteered the following details as to the treatment adopted: The procedure consisted, as alleged by him, in the application of a strong potash lotion, made from lees formed of the ash of sweet-fern and bayberry tops, designed to remove the cuticle. The tumor proper was then attacked by a caustic paste

bound upon its surface, prepared according to the formula:

R	Zinci chloridi	3 i.
	Amyl	3 ii.
	Podophyllin	3 ss.

By 9, P. M., the pulse was 140, very weak and intermittent, and death ultimately ensued at 9.30, P. M., from asphyxia, the pulse and heart-beat being perceptible fully eight minutes after voluntary respiration had ceased.

The patient whose life was thus abruptly terminated was a robust, rugged farmer, aged fifty-two, of steady, temperate habits; he had been in perfect physical condition up to the very day of his decease, with the exception of an occasional slight attack of neuralgic rheumatism. These periodic illnesses had excited some suspicions on his part as to the existence of kidney or heart disease, on which account I had from time to time examined him, and retain the record of several analyses of urine. The result of these examinations had led to the conclusion that he was free from all organic disease—an opinion confirmed by a careful *post-mortem* made by Dr. H. Warren White.

"Autopsy. Sixteen hours after death. Well-developed man, past middle life; cadaveric rigidity well marked. Dark, circumscribed discoloration of lower lip on left side; surface nearest the teeth ulcerated; not much infiltration. Skin, fatty layer scant. Musculature firm developed; good color. Brain, veins prominent; no signs of hæmorrhage, tumor, softening, inflammation, nor anything abnormal. Heart, left side moderately hypertrophied, blood fluid, valves healthy. Lungs, some hypostatic congestion, but remarkably free from adhesions or any morbid process. Liver, fair size, slightly congested. Gall-bladder partly filled, normal. Spleen somewhat softened and congested. Stomach moderately distended with gas, lining membrane perfectly normal. Oesophagus normal, save a congested ring about one inch above the cardiac orifice, possessing no significance. Intestines distended, vermiform appendix of above average length, and containing a small concretion; color everywhere normal. Pancreas normal in size and appearance. Kidneys healthy; normal relation between cortex and pyramids; cyst of the size of a filbert at apex of right kidney. Bladder full of urine; opened and found healthy. Intestines free from constrictions and other lesions."

If we accept the statement of the attendant and family concerning the treatment and subsequent behavior of this man, it is highly probable that death was due to the absorption by the *primæ viæ* of a portion of the strong mineral caustic (chloride of zinc), which trickled into the mouth from the plaster applied to the margin of the lip, the ingested poison proving fatal by the profound shock exerted upon the nervous system.

Nor is this theory of the specific action of the irritant poison invalidated by the absence of marked erosion or irritation of the mucous membrane of either mouth, oesophagus or stomach, which effect would not be produced if the poison entered the mouth slowly, receiving thus a large admixture of saliva. It seems, indeed, unaccountable that any appreciable quantity of so metallic-tasting a substance could have entered the mouth during consciousness without being promptly rejected; or, at least, without exciting some complaint. Attention may, however, have been diverted from the internal, local effect, or disagreeable taste, by the false assurance that the drug could be safely

swallowed: or, possibly, by the more painful action of the caustic upon the healthy tissue surrounding the diseased growth.

It was my privilege, as a medical student in Paris in 1864, to witness the experiments conducted by Maisonneuve in the treatment of carcinoma, scirrhus, and other recurrent and fibrous tumors by the so-called *cautérisation en flèches*, introduced by him in 1858. This treatment consisted in thrusting caustic arrows into deep incisions made with the bistoury in the periphery of the mass to be removed. In the course of twelve or fourteen days the diseased structure was destroyed and detached, leaving behind a clean, healthy surface, which became speedily cicatrized. These arrows were used not only in the case of morbid growths upon the surface of the body, but also in tumors of the neck of the uterus, the tongue, soft palate, tonsils, anus and rectum.

It was claimed by this surgeon, that while the styptic action of the caustic prevented all danger of hæmorrhage, its destructive action was confined to the diseased tissue in its immediate contact. The statistical results of this method, extending over a series of years, seemed to demonstrate its effectiveness; and that it lessened the danger of erysipelas and pyæmia at that time rife, owing to the insanitary condition of the Paris hospitals. I saw enough to convince me, however, that the pain produced by this process was immeasurably worse than that inflicted by the knife, and, of course, of much longer duration. The formula then employed by Maisonneuve was:—chloride of zinc, one part; wheaten flour, three parts; water, sufficient to make a paste. From this paste, rolled into a thin, round sheet, arrows of any dimensions could be cut. It will be observed, that the chloride of zinc used in the present case was identical in strength with that recommended by Maisonneuve.

As regards the medicinal use of this agent, it has been employed, largely diluted (m. x-xx to $\frac{3}{4}$ iv), as an urethral and vaginal injection; also as a collyrium in gonorrhœal and diphtheritic ophthalmia. It was at one time exhibited internally, especially in France, in small doses (5 to 10 centigrams a day), on account of its alleged antispasmodic action in certain nervous derangements such as chorea, epilepsy, hysteria and neuralgia; but was discarded on account of its uncertain therapeutic effect, and because of the deleterious results observed (colic, nausea, vomiting, convulsive movements, etc.)

As an external application, it was first used by Pappengath, a St. Petersburg physician, in the obliteration of fistulous ulcers of a scrofulous nature. Subsequently it was recommended by Hancke for the destruction of maternal nævi, syphilitic ulcers of carcinomatous appearance, etc. By various German writers (Moore, Reichel, Heine), it has been praised as a caustic injection. Lutin advises an aqueous solution of five to even ten per cent. in order to establish sloughing. In Hebra's wards in Vienna, in 1867, *lupus* was occasionally treated by means of a modified Cauquoin paste, the active ingredients of which were chloride of zinc and chloride of antimony: and I find in my note-book a formula, recommended for cancerous tumors of the breast, composed of chloride of zinc combined with chloride of bromine and chloride of antimony.

I have found but a single clinical fact to support the statement of Orfila as to the possibility of the ab-

sorption of this substance by a denuded surface. In *Pyl's Memoirs* a case is recorded (referred to by Naunyn, also by Woodman and Tidy), where the outward application of chloride of zinc to an eruption is said to have caused death in five hours with vomiting, purging, and convulsions. I have sought in vain for the work here alluded to, and find it difficult to accept a statement so utterly at variance with universal experience.

In the light of existing knowledge we are not, therefore, in condition to condemn the remedial agents resorted to in the present instance; for the caustic was employed in justifiable strength, and substantially as has been recommended by surgeons of repute. The malpractice consisted in the failure to employ ordinary and reasonable care in the management of the case, and in the deceptive statements as to the innocuousness of the drugs. The doctor was unfortunately ignorant of the toxic effect of his remedy when taken internally; and the patient, lulled into false security, thus failed to take the necessary precautions as to allowing the poison to enter the mouth or stomach.

Poisoning by chloride of zinc, though formerly unknown, has been comparatively frequent in England, since the introduction of Sir William Burnett's disinfecting fluid, which contains about two hundred grains of the salt to the ounce. More recently, cases of poisoning have occurred, both in this country and abroad, from the use of canned vegetables and meats containing a small quantity of chloride of zinc dropped into the cans from the soldering material applied to secure the lid. If the dose of the poison administered be large, death ensues ordinarily within a few hours from its irritant or corrosive action: characterized by a burning sensation, colic, vomiting, diarrhœa, cramps and convulsions. If, on the other hand, the poison be taken in smaller doses, or less concentrated, so as to be absorbed; or, if the patient does not at once succumb to the primary corrosive action, then the secondary, specific effect of the drug upon the nervous system is manifested; indicated by venous congestion, stupor, dilated pupils, convulsive movements, paralysis, and coma, a group of symptoms resembling those of uræmic poisoning. This compound toxic effect is more frequently witnessed in certain poisons derived from the vegetable kingdom, such as *nuxvomica*, hemlock, monkshood, veratrine, and poisonous mushrooms.

I am inclined to believe that the behavior of the pupils under the influence of this poison may not be constant nor characteristic, although dilatation is the condition commonly noticed; for it is not assumed that this change in the iris is essentially the result of a local action upon the muscular fibres or blood-vessels of this organ such as is produced, for instance, by belladonna: it is rather to be included in the category of the familiar phenomena liable to follow any sudden and severe disturbance of the central nervous system, the rationale of which phenomena is by no means clearly understood. Hence, it would not be strange, if, as in some instances of traumatic shock, the contracted pupils, or so-called pupils of erethism, were at times observed.²

The first reported instance of fatal poisoning by chloride of zinc is that related by Dr. Letheby, former lecturer on chemistry in the Medical School of the London Hospital, and to show that this dual action of

² Vide Grønningen, Ueber den Shock, p. 86.

the drug was fully recognized and accurately described by this distinguished writer, I may reproduce in synopsis his article.³

The patient, a girl aged fifteen months, "when first seen was in a semicomatose state, the vital powers being much prostrated, the countenance pale and anxious, the breathing thoracic and rapid, the pulse quick and fluttering, and the general surface of the body cold and bedewed with perspiration. The swelling of the lips and the thick, transparent mucus adhering to them, led to further examination, and the lining membrane of the mouth was found to have the appearance of having undergone the action of a corrosive substance. The child had been well in the morning, and only an hour and a half before had been seized with most violent sickness after swallowing some of Burnett's fluid. . . . No relief could be given; vomiting of a frothy liquid took place at intervals, but the coma became deeper, the respiration slower, the pulse more feeble, and ten hours after the symptoms had commenced the child died."

Experiments made by Dr. Letheby with this liquid in order to determine its leading chemical and physiological characters, showed: firstly, That chloride of zinc is distinguished from the other salts of this metal by its quick and firm coagulating action on liquid albumen and on the delicate tissues of the body. Secondly, That a solution of chloride of zinc exerts a twofold action on the living animal economy. Its first effect is that of an irritant and caustic; the liquid coagulates the tissues and gives pain in the part to which it is applied, and causes almost instantaneous vomiting. It appears moreover, from the investigations of Orfila, that the salts of zinc act upon the stomach not only when they are introduced into this organ, but also when they are injected into the blood-vessels of the body. The second effects are of a constitutional character, and it would appear that the poison exerts a distinct and specific action on the motor and organic system of nerves; for soon after the poison gains access to the circulation, the breathing and pulse become accelerated; paralysis of the voluntary muscles commences; the surface of the body grows cold, the pupil is dilated; the circulation and respiration become more and more affected, coma supervenes, and death takes place without a struggle.

Dr. Letheby proved, moreover, by experiments, that the poison is absorbed from the alimentary canal and carried into the general circulation. He has detected the metal in the blood removed from the heart, in the tissues of the body, and in the urine excreted during life. The appearances presented by the blood indicate that the poison exerts some peculiar action on this fluid, which is found black and uncoagulated; and the cavities of the heart are distended as if the organ had lost the power of contracting on its contents.

To Dr. John G. Johnson, of Brooklyn, belongs the credit of first directing public attention to the danger arising from the use of fruit and vegetables preserved in cans, the lids of which have been soldered with chloride of zinc instead of resin; and he has, furthermore, demonstrated that it is impossible for the most expert workman to employ this objectionable solder without dropping some portion of it into the can. In the *Sanitarian* for June, 1884, he gives a most instructive account of the poisoning of six persons in

one family from this source. These cases having been made the subject of subsequent litigation have attracted extensive notice, and are of especial value in that they illustrate the compound action of the drug in a single subject.

In a more recent contribution to this same subject,⁴ Dr. Johnson propounds the novel theory, that a still more subtle form of poisoning resulting from the continued use of these canned goods may consist in a chronic disturbance of the renal functions (nephritis) accompanied by albuminuria, and ultimately giving rise to a form of Bright's disease. This theory, though not yet demonstrated by clinical observations or physiological experiments is certainly in accord with the more recent hypothesis framed to explain some of the phenomena of lead poisoning (*amaurosis, retinitis, nephritis, etc.*) in which the retention of the constituents of the urine and the concomitant accumulation of the poison may give rise to symptoms resembling in their ultimate development those of uræmic poisoning.

As regards the legal responsibility in this case, where death was presumptively owing to the treatment received and caused by it, there cannot be much doubt as to the criminal liability of the delinquent practitioner for the injury thus caused. Indeed, two successful actions have recently been sustained in this State, in which the negligence or culpability was certainly no greater than in the present instance; that of Pierce, who caused the death of a woman by the application of kerosene, and that of the woman-practitioner Cummings, whose negligence and recklessness in the use of the fluid extract of the St. Ignatius bean led to a fatal result. The principle of law laid down by the court in these cases is, that if a person publicly practising as a physician, on being called to a sick person prescribes with foolhardy presumption a course of treatment which causes death, proper medical assistance being at the time procurable, he may be found guilty of manslaughter, although he acted with the patient's consent, and with no ill intent.⁵

In the case of Pierce, it was held by the Supreme Court that the defendant's knowledge or ignorance of the fatal tendency of the prescription did not have an important bearing upon his guilt or innocence; inasmuch as every physician is supposed to possess a familiarity with the remedies which he employs; and if any one assumes to prescribe without the exercise of ordinary prudence, and, not being in the possession of common experience, thereby seriously and unreasonably endangers life, he does so at his peril.

To quote the apt illustration of Judge Holmes: "When the jury are asked whether a stick of a certain size was a deadly weapon, they are not asked further whether the defendant knew that it was so. It is enough that he used it and saw it such as it was. . . . Indeed, if the defendant had known the fatal tendency of the prescription, he would have been perilously near the line of murder."

This is now the law in Massachusetts, and it is in harmony with the English law, as well as with a multitude of decisions in other States; and the rule, while working no harm to the competent physician exercising his calling with reasonable diligence and care, must conduce to the safety and welfare of the community, in so far as it assigns some limitations to

⁴ New York Medical Journal, April 24, 1886.

⁵ Mass. Reports, 138, 165.

³ *Vide* Lancet, June 11, 1880, p. 23.

the license of reckless pretenders. It is uncertain, whether it was the recognition of this liability, or a dread of exposure which led the principal in this fatal experiment to settle with the family of the victim without allowing the case to come to trial.

There exists in every community a class of sufferers, who, in consequence of some previous fright or personal idiosyncrasy, entertain a morbid dread of any operation involving hæmorrhage, and who prefer therefore to submit to pain, rather than to the surgeon's knife. Such persons are surely not to be blamed if they elect treatment by caustic rather than by surgical operation, when it has been asserted by competent surgeons who are supported by official statistics, that not only does the caustic promise a result equally favorable to that obtained by excision, but, moreover, that the morbid growths are more thoroughly reached and their recurrence thereby rendered less probable.

It is, therefore, to be regretted, that so many patients are compelled, in order to obtain relief by this method of their choice, to resort to non-reputable practitioners, because the legitimate treatment by caustics formerly so highly commended has by reason of fashion, or from other insufficient causes, been substantially discarded by the regular profession.

TENDERNESS OF THE SPINE IN HEALTH AND DISEASE, AND THE THERAPEUTIC EFFECTS OF BLISTERING OVER THE FOURTH AND FIFTH DORSAL VERTEBRÆ.

BY MORTON PRINCE, M.D.

Physician for Nervous Diseases to Out-Patients, Boston City Hospital.

In an article published not long since in the *Lancet*,¹ Dr. Alexander Harkins, of Belfast, calls attention to a phenomenon which he claims, as a result of very extended observations, is normally to be observed in every individual; namely, tenderness on percussion over the fourth or fifth, or both, dorsal vertebræ. Dr. Harkins at first thought that this was peculiar to women suffering from various neuroses, but after examining the spines of a large number of people of both sexes, he concluded that tenderness of one or both of these vertebræ was the normal condition of every individual of every age and class. Of one hundred and thirty-one female children and girls, from six to sixteen years of age, every one complained of tenderness in this region when the spines were percussed. Of thirty-five women, of various ages, the phenomenon was present in the greater number, while "a number resented the examination, were sulky or gave indifferent answers." Of thirty-one boys, eleven to nineteen years of age, and of three hundred men, tenderness was observed in every case. The pain was said to be peculiar; "some compared it to an electric shock, diffused over the chest and arms; others liken it to the tingling sensation caused by a knock upon the ulnar nerve, at bend of elbow, and all declare it disagreeable."

Dr. Harkins further claims that he has constantly been enabled to cure a large number of neuroses by the simple method of placing a blister over the tender spot. The vomiting of pregnancy seems especially to have been amenable to this treatment. "I have not

once failed," he writes, "for many years by a single vesication over these vertebræ, to put an end at once to the sickness of pregnancy, for the whole remaining period of gestation, no matter at what stage I was consulted. The neuralgic toothache, and the pruritus pudendi of the puerperal condition yield as readily to one application." Dr. Harkins's paper contains the notes of a number of cases in which a cure was speedily effected. They include, besides the neurosis of pregnancy, chorea, facial paralysis, facial spasm, neuralgia, oozæma, and dysmenorrhœa.

The great care with which Dr. Harkins's observations have been made and recorded entitle them to something more than passing attention, and it is evident at once, that if they should be confirmed, they must be of great practical value. Tenderness over some part of the spinal column is generally regarded as symptomatic of a number of nervous disorders. Every one, probably, has carefully percussed a multitude of spines and gravely recorded the tender spots in his note-book. But if it be true that we all are the possessors of a tender spot, such tenderness, when associated with disease, would lose much of its pathological significance, at least when located over the fourth or fifth dorsal vertebræ.

Even in so-called spinal irritation, local tenderness, which has played such a prominent part, must lose much of its diagnostic value, and even some of its power as a claimant for sympathy for the sufferer.

Furthermore, if such remarkable therapeutic effects can be obtained by such a simple procedure as blistering in the above described fashion, we have a powerful remedy at our disposal for many intractable diseases.

Accordingly the writer set about percussing the spines of a number of healthy and unhealthy individuals, and blistering such unhappy ones as promised to be good subjects for experiments. Though the results obtained have not completely confirmed those obtained by Dr. Harkins, they appear to be sufficiently striking to be worth recording, and to be not devoid of practical value. They seem to the writer to aid in giving the proper value to spinal tenderness as a symptom, as well as to a therapeutic procedure which in suitable cases must prove of unquestionable utility.

First, the spines of 57 healthy men were percussed. In 53 of these no tenderness whatever could be detected. Two, only, complained of tenderness over the fourth and fifth dorsal vertebræ, while one stated that the third dorsal, and one the tenth and twelfth dorsal were tender.

To avoid error more force was used when striking over the vertebræ in question than over the remainder, though all were struck with considerable force. As a percussor, the knuckles of the forefinger were used, the fist being firmly clinched; sometimes a percussion hammer was substituted, often both were tried. The subjects were stripped to the waist and put in a favorable position for the experiment.

The subjects of experiment were applicants for position on the Boston Fire Department, and it occurred to me at the outset that the results obtained might be affected by the men denying all tenderness, for fear of appearing unsound. To offset this, as a source of fallacy, I impressed upon their minds the object of the examination, and even insisted that every healthy man ought to have a tender spot in his spine. But it was all to no purpose. Even after making a

¹1883. v. li., pp. 56 and 993.