he recommends three grains three times a day. He claims excellent results. Lastly, we have seen small doses of jaborandi recommended on the principle of *similia similibus*.

In my own experience the atropine treatment with night feeding and sponging has been the most successful.

(*c*.) *The Hæmoptysis*. The hæmoptysis in phthisis results either from congestion around a tuberculous deposit or from the rupture of a blood-vessel or (according to Damaschino) small aneurisms in a cavity. The most valuable means for combating this always alarming accident are subcutaneous injections of ergotine, two grammes to thirty grammes of water. Squibb's fluid extract of ergot may be given in doses of ten drops every hour, or even every half hour. Dobell's solution, which consists of an ounce of compound infusion of roses, to which is added twenty drops fluid extract ergot, twenty of tincture of digitalis, ten grains gallic acid, fifty of sulphate of magnesia, and ten drops dilute sulphuric acid, — the whole to be taken at one dose, and repeated every three hours till the hæmorrhage ceases, — is a deservedly popular prescription, combining the ordinary hæmostatic remedies with a cardiac sedative, digitalis.

(*d*.) The diarrhœa of phthisis is often very stubborn, depending as it does generally on intestinal tuberculosis and ulceration. It requires a rigid dietary regimen of milk, flour gruel, aided, it may be, by pancreatic emulsion, raw meat, etc., with opium in sufficient doses. The best results, in my opinion, attend the combination of opium with bismuth, one grain of the former to ten, or even twenty, of the latter.

(*e*.) The fever of phthisis, which is generally of a suppurative, remittent, or intermittent type, is little amenable to aconite, veratrum, and other popular febrifuge medicaments. If I may again refer to personal experience, I would say that I have had no success in treating this fever with the large doses of quinine and salicylic acid which have been advised, while I have certainly been more successful with cold sponging and the administration of mineral acids. The euchlorine mixture, recommended by Watson, has at times been of marked service.

A CASE OF SUPPURATIVE HEPATITIS DUE TO A PIN IN THE VERMIFORM APPENDIX.

BY M. D. CHURCH, M. D.

ON Saturday, A. M., November 11, 1882, I was called so see E. K., an unusually bright, active child of nine years, who on the day previous returned from school complaining of lassitude and great weakness, which came over her during the afternoon while in school. In reply to her mother's inquiry she said she felt no pain in any part; some household remedies were administered during the evening and the child was placed in bed, where she passed a restless night. Upon inquiry I learned that the child had always been healthy, although she looked delicate; family history good. No history of an accident or injury could be obtained. Her mother said her appetite was always precarious, and she thought declining during the last few days. Bowels usually inclined to constipation. Examination showed a girl rather tall for one of her years, with delicate skin and features; cutaneous blood-vessels remarkably prominent over the entire body, especially the trunk. Percussion and auscultation of the chest and abdomen revealed nothing abnormal; deep pressure in either hypochondrium showed no tenderness, tumor, or swelling. Examination of the urine on the following day showed the kidneys to be in a healthy condition. At the time of visit the pulse was 90, respiration normal, temperature 99° F. From the 11th to the 17th inst., the child insisted upon being dressed and lying upon the lounge during the day, and her general condition remained about the same as at my first visit until the 18th, when she had (as her mother described to me) a "nervous spell," during which she was very restless and thirsty; cheeks became red, although the skin was very harsh and dry, and after an hour slightly moist from perspiration, when she appeared as on days previous. This was repeated on the day following at nearly the same hour. On the 20th she was suddenly seized with a "shivering spell," and complained of feeling cold, accompanied with some nausea and occasional vomiting. The chilly sensation soon passed off, and pallor was replaced by flushing and suffusion of the face. These phenomena having occurred in the P. M. after my visit in the morning, I changed my hour of visitation, and on the following day (November 21st, 4.30 P. M.) found the patient in profound chill, shivering, nauseated, and vomiting, vomitus consisting of ingested fluids and bile. The chill lasted about forty-five minutes, and was quickly followed by flushed face, quickened pulse, thirst, and rise in temperature. Temperature at height of fever 103° F.; pulse 112; respiration 28. Ordered quinine in cachet form, two and a half grains each, to be given till roaring in the ears was complained of. The patient said she had no pain whatever. On the following day I found her comfortable, and she said she felt much better; ordered the quinine continued in sufficient quantity to produce slight cinchonism for at least four hours previous to time of expected chill. But the patient strongly objecting, the drug was not given as directed, and that night at nine P. M. a chill occurred, accompanied by retching and vomiting. Insisting upon the regular exhibition of the drug, there were no chills or chilly sensations during the succeeding four days, although the pulse remained accelerated 100.

On the 27th she complained of headache, and the quinine was discontinued. Patient seemed quite bright and cheerful, and at time of visit said she felt much better. Percussion and auscultation of the chest gave negative results; no pain or tenderness in any part was complained of, although deep digital pressure was made in both hypochondria, and percussion and pressure over the liver and spleen. Percussion over the liver seemed to indicate a slight increase in the area of hepatic dullness upwards and towards the median line of the body, also slight enlargement of the spleen.

On the 28th patient had another chill, followed by fever, with nausea and vomiting. There being such a repugnance to the quinine when administered by the mouth, it was combined with nutrient enemata, which became imperative in consequence of the weakness and irritability of the stomach.

On the 29th, after a restless night, patient had a chill at five o'clock A. M., when nausea, retching, and vomiting became severe; yet she said she had no pain. Being called at nine A. M, I ordered for the vomiting sodii bicarb. 10.00, oil absinthii .20, aquæ 100.00, teaspoonful every hour. At four P. M. found the patient quite comfortable; had retained nutrient enemata, also

a small quantity of brandy and beef-juice. The fever following the chill in the A. M. reached the highest point observed during her illness, 105.8° F. Directions were given to continue the quinine if the stomach would permit, which was begun at the time of my visit in the P. M.

November 30th, five P. M. Pulse 100; respiration and temperature normal. Found the patient sweating gently; said she felt no pain or tenderness while being examined; had taken one grain of quinine during the day.

On the following morning, December 1st, I learned that a chill came on at ten P. M. the day previous, between which and the appearance of fever there was an interval of over half an hour, during which the patient slept quite soundly, when a rise of temperature commenced which did not exceed 102° F., and was short in duration.

On the 2d of December she complained of severe pain in the right hip and thigh of a lancinating character, for which warm applications were prescribed, and which soon disappeared. Examination of the liver and spleen showed no thickened margin or perceptible tumor or fluctuation, but area of dullness over both organs seemed increased, so that a line of dullness extended almost across the body. Dr. S. E. Wyman being called in consultation, remarked that there was a continuous area of dullness across the body, whether due to enlargement of the liver entirely, or both spleen and liver, he would not say positively. During the examination deep digital pressure was made in both hypochondriac regions, and pressure and percussion over the liver, but no tumor or tenderness was found, neither was pain excited; no râles or dullness were found about the lungs.

On the following day, December 2d, while vomiting during a chill, the patient complained of epigastric pain, which was felt only while vomiting.

December 3d. Considerable cough, while the chilly sensation was complained of, and the patient wanted to lie upon the left side; complete anorexia; marked emaciation; mind perfectly clear. Pulse 98; respiration and temperature normal. Nutrient enemata rejected; great weakness complained of, but no pain.

December 4th. Examination of urine showed diminished specific gravity (1013), greatly diminished chlorides, increased coloring matter, mere trace of albumen, but no casts. During the night previous there had been two involuntary diarrhœal discharges.

December 6th. A chill came on at six A. M., when nausea and vomiting became persistent; much pain was complained of while vomiting, and referred to the stomach. The chill was followed by rise of temperature which terminated in profuse perspiration.

Dr. J. T. G. Nichols saw the patient in consultation on this day, and after a careful examination said that he would not assert positively that there was splenic enlargement, although the patient complained of tenderness whenever pressure or percussion was made over this organ. The diagnosis that seemed most probable was pyæmia from some internal cause, probably a pylo-phlebitis. The extreme irritability of the stomach precluded the use of any medicines except such as could be administered in form of enemata. Soda-water and champagne in teaspoonful doses were administered at intervals of half an hour, and for twenty-four hours, immediately returned.

December 7th. Patient had a chill at one P. M., short in duration, and quickly followed by fever. Pulse at time of visit, five P. M., 112; respiration 32; temperature 104.5° F. Examination of urine showed diminished quantity, specific gravity, chlorides and phosphates; large trace of albumen and bile coloring matter.

On the 9th the amount of urine excreted greatly diminished (480 grammes) in twenty-four hours, was high colored, and contained considerable bile. The patient seemed much weaker, and had a peculiar pinched and emaciated look. The conjunctival mucous membrane and scleral coat slightly stained with bile pigment.

December 10th. Pulse 104; respiration 28; temperature 100° F. The patient complained of itching over the entire body; skin was dry and markedly icteric; tenderness manifest over the region of the liver and spleen on palpation or percussion, but no pain.

December 12th. Pulse 100; respiration 24; temperature normal; skin deep yellow in color; tongue thickly covered with a dirty brown incrustation; area of hepatic dullness much extended; pressure or percussion over the region of the gall-bladder causes pain; no dyspnœa. Chest examination showed the heart and lungs to be in a healthy condition. Examination of the urine at this stage showed the amount of albumen to be one fourth per cent., also to contain hyaline, granular, and epithelial casts, and much degenerated renal epithelial cells, all of which were deeply bile-stained. The amount of urine passed in twenty-four hours 180 grammes. One normal dejection during the day.

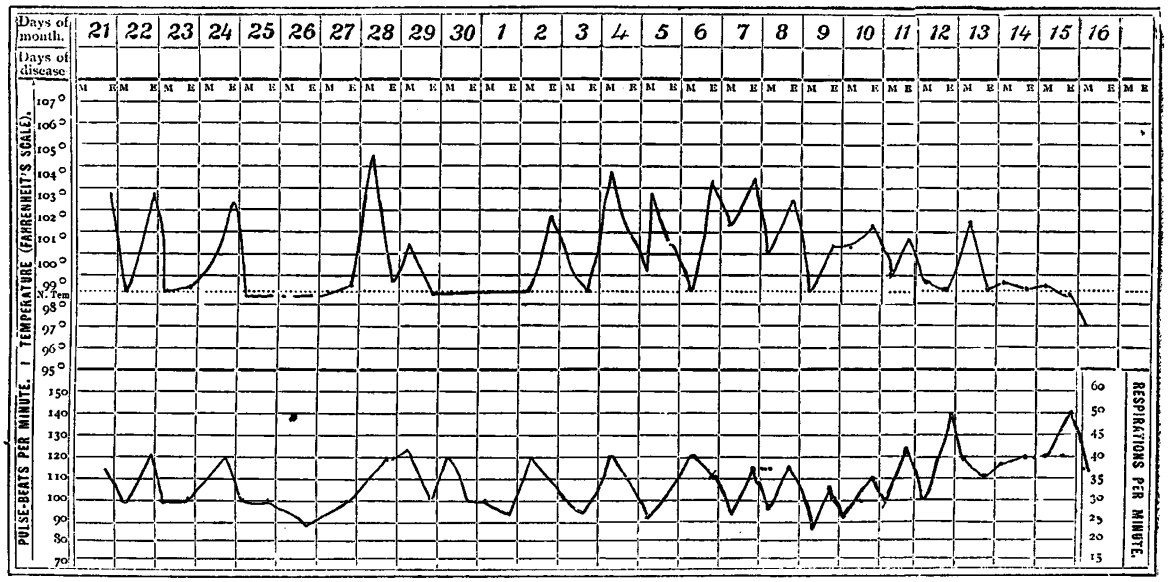
December 13th, thirty-third day of illness. Pulse 120; respiration 32; temperature normal. The patient passed a restless night; nutrient enemata retained. The amount of urine passed in twelve hours 120 grammes; the urine thick, and contains large amount of bile; bits of cloth or paper dipped in it were deeply stained with bile pigment. During the day there were two dejections deeply stained with bile coloring matter. Tenderness over the gall-bladder more marked, but no tumor or fluctuation discernible; no pain except when pressure is made over the liver.

December 14th, 9.30 A. M. Pulse 112; respiration 32; temperature normal. Patient vomited once during the night; vesical tenesmus marked; amount of urine passed in twelve hours ninety grammes; mind clear; no pain except on pressure; auscultation shows diminished vesicular murmur at the apex of the right lung, also over upper lobe of the left lung in front, with fine mucus râles; the patient complained of cold feet and limbs; assumed the supine position, with limbs sharply flexed on the body; the teeth covered with sordes; the bright yellow color of the skin had given place to a greenish tinge. Five P. M. No nausea or vomiting during the day; the amount of urine passed since the morning visit 150 grammes, lighter in color, and the amount of bile, as indicated by the color test, diminished; the countenance was more composed; mind clear; no cough or pain; pulse 120; respiration 32; temperature normal.

December 15th, ten A. M. Pulse 116; respiration 32; temperature 99° F. Patient quite restless till midnight; slight nausea and vomiting in the early morning preceded by a feeling of coldness; amount of urine during last twelve hours 150 grammes; the amount of albumen increased nearly one half per cent.; nutrient enemata during the night and morning returned; the greenish tinge of the countenance had

nearly disappeared; color of the skin a bright yellow; area of dullness and tenderness over the liver increased, but no tumor or fluctuation could be made out; no pain experienced except when pressure was made or the patient turned upon the right side; patient's mind clear, and she said she knew she could not recover. Half past eight P. M., same day, was called, and found the patient breathing rapidly, and much excited and talkative; pulse 116; respiration 60; temperature 99° F.; pulse very feeble, and respiration labored. When asked if she was suffering pain, she said no; neither could I discern any obstruction to respiration. The patient asked for some cake and milk, of which she partook, and said she felt better, and was ready and willing to die.

December 16th, 9.30. Pulse 112; respiration 36; temperature 97° F.; patient talked nearly all night; mind perfectly clear; voice quite strong at the time of my visit; she said she had no pain except when pressure was made over the liver; abdomen quite tympanitic. The patient continued in earnest conversation with her friends until one o'clock, when she became comatose, and expired at 1.30 P. M., after thirty-six days of illness.



Autopsy performed and reported by Dr. S. E. Wyman, December 17th, twenty-two hours after death.

Body markedly icteric. Emaciation marked. Rigor mortis moderate. No external wounds. Panniculus adiposus reduced to minimum. On opening the abdomen an enlarged liver was seen extending nearly to the umbilicus. No adhesions of the peritonæum, but a slight amount of clear, colorless serum in the pelvis.

Heart normal in size, with, perhaps, a little less firmness of the muscular tissue. Valves intact. Recent clot in both ventricles, larger in the right.

Lungs were not adherent; both crepitate; everywhere discolored by bile pigment, and made to resemble wash-leather in color. At the extreme edge of the lower lobe of the right lung, on its anterior surface, were two small spots of consolidation, dark red in color, hard to the feel, and which on section showed no evidence of containing air or pus. In the upper part of the upper lobe of the left lung was a larger spot of hardened tissue, from which, on section, pus flowed. The lung tissue surrounding this spot contained more blood than usual.

Spleen normal in size and consistency.

Kidneys not enlarged. On section the cortical portion projected over the edge of the cut. The cut surface had a peculiar wash-leather color, and was deeply bile-stained. The cortical portion slightly swollen, suggesting parenchymatous inflammation. Capsule stripped readily, leaving a perfectly smooth surface.

The stomach contained about six ounces of greenish fluid, with a perfectly healthy condition of the lining membrane.

As soon as the abdominal cavity was opened the liver was seen to occupy more than the usual space in the lateral and downward directions. On the top of the anterior surface of the right lobe there was an area, measuring three inches in diameter, over which the general color was much darker than the surrounding liver tissue, containing irregularly-shaped, yellow-looking spots. This area was elevated above the surrounding parts, gradually rising from the edges towards the centre, and markedly fluctuating on pressure. There was no inflammation of the peritonæum over the liver. On turning up the organ *in situ* there was seen a second swelling on its under surface, in the lobus quadratus, just inside of (towards the median line of the body) the gall-bladder. This swelling was much more circumscribed (one inch diameter), with greater elevation. It was resting upon the duodenum (whose surface was stained a deep brown at the point of contact), and from it pus flowed upon the gentlest manipulation. After the removal of the intestines the liver was taken out. Weight two pounds, one ounce; measured eight inches in its transverse, and six and one half inches in its longitudinal diameter.

The gall-bladder was normal in appearance, and contained some bile. Duct pervious.

On section the liver was deeply stained with bile; acini quite distinct; general cut surface granular. On cutting through the larger abscess it was found that there was no distinct membrane inclosing it, but that in its immediate neighborhood there was a zone of very much congested, darker hepatic tissue. The interior of the abscess was found to consist of several

subdivisions, resembling in coarse structure the microscopic appearance of carcinoma, namely, alveola; spaces filled with pure, creamy pus (nowhere bile-stained), and the walls of the alveoli made up of trabeculæ of tough, dense, fibrous tissue. The alveoli varied in size and shape. The same condition was found in the smaller abscess, but less marked. No other abscesses were found in the liver. During the examination pus welled out of the portal vein. On careful examination of the portal vein no thrombus or embolus was found; the walls of the vein were smooth, shining, and not injected.

The intestines were removed from below upwards. The appendix vermiformis was firmly bound down to the peritonæum of the iliac fossa, but no evidences of inflammation were seen. As soon as the appendix was touched it was evident that it contained some solid body, suggesting a pin, needle, or fish bone. Great care was exercised in removing the intestines, and after removal the appendix was opened by using a pair of blunt-pointed scissors. There was no perforation of the appendix, which very closely resembled a miniature glove-finger, with quite a blunt distal termination. After opening the appendix for a short distance some difficulty was experienced in advancing the points of the scissors, and some fluid, which was thick and yellow, flowed out. Pus? When laid open to its blind extremity there was found a pin lying longitudinally, with its point towards the cæcum. The pin was much corroded, its point invaginated beneath the mucous membrane for quite one half of its length. The mucous membrane of the appendix was markedly thickened, its surface elevated above the surrounding parts, with a very dark color in that portion in immediate contact with the pin; there were also many minute dark spots dotted here and there throughout the rest of the mucous membrane. There were no evidences of thrombosis in any of the mesenteric veins, which were somewhat more injected than normal. Mesenteric glands plainly visible, but not enlarged. The pelvic organs were not removed. The bladder was seen considerably distended, filling up the greater part of the pelvic cavity.

Head not examined.

Among the interstitial inflammatory affections of the liver, Orth says "that purulent inflammation appearing in the form of abscesses is rare." When observed in temperate climates it is most frequently dependent upon ulceration and perforation of the vermiform appendix (typhlitis), or purulent inflammation in surrounding tissues (perityphlitis). So far as I am aware there is but one recorded observation where hepatic abscess arose from a purely mechanical irritative cause existing in the appendix cæci, which was the seat of neither inflammation, ulceration, nor perforation. In the Transactions of the Pathological Society of London, Payne reports a case in St. Mary's Hospital where a woman died from what had been diagnosticated "pyæmia of internal origin." At the autopsy a black pin was found in the appendix vermiformis, its point projecting one fourth of an inch into the cæcum; its shaft was surrounded by fecal concretions. The mucous membrane was considerably thickened, otherwise it presented a normal appearance. There was no enlargement or ulceration of the mesenteric glands, neither were there coagula (thrombi) found in the mesenteric veins; in fact, no lesions could be distinguished at any spot between the apparent starting-point of disease (the appendix) and the liver, where a single large abscess was found, surrounded by softened and disintegrating hepatic tissue. So far as a post-mortem examination could discover, there was no inflammation of the portal veins. While it was natural to suppose that some relation existed between the presence of a foreign body in such a situation and abscess of the liver, so far as the report shows, there was no attempt either to disprove the accuracy of the diagnosis or trace the ætiology of the disease in the liver farther than what simple inspection might reveal. However, in justice to the observer it should be remembered that pathological-histology was not so thoroughly taught or practiced at that time (1869) as at the present day.

It is to this branch of science that we must look for aid if we would understand or observe the relation of morbid cause to effect. In many cases the mode and place of origin of pathological processes is difficult to discover, even when studied and examined in the light of a careful and painstaking post-mortem investigation. As in Payne's case, the unaided eye of the examiner could only discern diseased processes at their extreme points of origin and greatest manifestation, while the intermediate steps in their development were unknown, or at the best undiscovered. Pathologists affirm that hepatic abscess is most frequently the result of embolism or some form of thrombosis, originating in vessels distributed to the cæcum, ascending and transverse portions of the colon; although Ziemssen says that "abscess of the liver may exist when a thrombus in the primary or an embolus in the secondary pathological condition cannot be found, because they have been completely destroyed."

Pathological science teaches that thrombi forming in vessels with healthy walls are benignant, but may become malignant in character by absorbing the product of inflammatory disease within the vessel wall or circumjacent parts (as in perityphlitic abscess, etc.); that thrombi possess the power of originating disease in distant organs to which they have been transported in the blood stream, of a benignant or malignant character, according as they act in a purely mechanical manner, by arresting the blood flow to parts beyond, or in a septic manner, by exciting within the vessel where they are lodged true inflammation (phlebitis).

It further teaches that in consequence of the intimate and peculiar anatomical relation existing between the portal (or interlobular) and the hepatic (or intralobular) veins there may be a transference of inflammatory processes from the former to the latter, whereby new foci of infection are established for a farther dissemination of disease throughout the pulmonary circuit.

Pathological histology has demonstrated that hepatic abscesses of pyæmic origin are small, multiple, and disseminated; that the liver cells are the parts first affected, either by atrophy, infiltration, or granular disintegration, while other parts of the organ may remain comparatively normal or become secondarily affected. Single large purulent deposits are rarely if ever found in the liver associated with pyæmia, while, on the other hand, they are frequently the result of disease originating within a vessel. In pylo-phlebitis, the wall of the affected vessel is greatly thickened from proliferation of the connective tissue cells, so that the true liver cells lose their hexagonal contour from pressure, and assume irregular shapes, but remain unaffected except at the point of abscess formation, where they are com-

pletely destroyed. When the hepatic vessels are affected by inflammatory disease transmitted from the portal, their walls are thickened, the lumen greatly increased, and the vessels are filled with thrombi in different stages of disintegration, or abundance of pus corpuscles, which being mingled with the blood of the inferior vena cava, are poured into the right side of the heart, from thence to the lungs, where they may give rise to infarctions, embolic abscess, or true embolic pneumonia.

The opportunity to examine a more unique case than the present is rarely presented. The microscopic examination of various organs afforded an admirable opportunity to verify the teachings of pathology, and observe many of the intermediate steps in the development of the fatal disease.

Sections from the liver in the vicinity of the abscess and through the abscess wall showed the liver cells unaffected but greatly distorted, from pressure, so much so as to appear like columnar epithelium; the walls of the portal and hepatic veins were greatly thickened, and the calibre of the latter much increased, while both systems of vessels were filled with granular detritus, pus corpuscles, and thrombi in various stages of disintegration. Sections from the affected portions of the lung showed the alveoli filled with granular matter, while the vessels containing the emboli were apparently unaffected. Thrombi were found in the vessels leading to the affected portions, but without the radius of the diseased area. Examination of the kidney showed casts in abundance within the uriniferous tubules, but few perceptible changes in the cortex or interstitial tissue.

The case seems, from the pathological conditions observed, to have been one of phlebitic rather than of pyæmic origin. It is of interest to determine the exact spot where inflammation originated, whether at the point where the pin was found or within the liver. It certainly would seem to be a just conclusion that it arose at the point of greatest mechanical irritation, where thrombi were formed from pressure exerted by the swollen mucous membrane, and later rendered septic by the absorption of pus. Yet it certainly would seem reasonable to suppose that the parts about the appendix would have shown greater evidence of inflammation. The disturbance in the kidneys, doubtless, was of an irritative character, from the passage of the biliary salts producing congestion.

The case is particularly instructive in its clinical features, as showing how grave and fatal a disease may exist within the liver and other organs unattended by pain or soreness, the two earliest symptoms thought to be of greatest diagnostic value. Also as showing how a purely local irritative cause may originate disease of a benignant character which later may become malignant. It is noticeable that in the present case there were no inflammatory processes in the neighborhood of the cæcum which could occasion any severe symptoms during life, hence differing from the class of cases described as typhlitis or perityphlitis; that there was no perforation or peritonitis; that in the absence of local symptoms the diagnosis could not at the best have reached a greater precision than to infer the existence of some pyæmic or phlebitic process from some internal cause. It is therefore probable that other cases described as pyæmic of internal origin, and unconfirmed by post-mortem and microscopic examination, may have a similar origin.

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N. B. It was not known that the child had swallowed a pin until it was shown to the parents after autopsy, when her sister said she remembered when it happened, but had quite forgotten the occurrence. According to the latter's statement the pin was swallowed about the middle of August, and the fatal illness began November 10, 1882.

A PHYSIOLOGICAL METHOD OF TREATING CARIES OF THE DORSAL VERTEBRÆ.

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CARIES of the vertebræ is recognized as occurring most frequently in the dorsal region,[1] and it is also considered the most difficult to cure in this region[2] by any of the methods in vogue.

If simple *fixation* braces be used, such as Davis's, Washburn's, Knight's, or Shaffer's, there is not sufficient backward traction produced to relieve the diseased bodies of the vertebræ from weight, nor is there forward pressure produced about the seat of the disease to combat deformity.

If *symmetrical extension* is desired, and the plaster jacket is used for this purpose, the jury mast will be required in addition, if the disease be in the middle or upper dorsal region, and the apparatus is cumbersome and not adjustable.

Wyeth's or Roberts' *local extension* jackets are not available unless provided with a head rest, and are then too heavy and unmanageable for nice practice.[3]

Backward traction is the most convenient and useful plan of treatment which we have at command. This aims to curve the spine backward so as to relieve the bodies of the vertebræ from the superincumbent weight which is thereby transferred to the posterior processes.

There are several methods of effecting this: the use of the *plaster jacket* applied while the patient lies face downward in a hammock (Davy), or upon two bands, — pelvic and thoracic — (Halsted), constituting *one;* the *fixation brace* of Mr. E. J. Chance,[4] of London, which is provided with pads opposite the seat of disease, from which the upper part of the metal frame is bent backward at an angle, being a *second* method; while the use of the double knuckle joint *lever* brace of Dr. C. F. Taylor,[5] of New York, constitutes a *third.* The latter not only curves the spine backward, but by its forward leverage upon the transverse processes of the diseased vertebræ tends to reduce or prevent the deformity.

It is, however, very heavy, since its peculiar construction necessitates great strength of material, as it is so arranged as to bring an unnecessarily severe pressure upon the spine at the seat of disease, leading in some cases to excoriation.[6] These systems of treatment have, with few exceptions, been before the profession for a sufficiently long period, and have been employed with varying degrees of success; but, on the

[1] Pott's Disease. By Newton M. Shaffer, M. D. G. P. Putnam's Sons. 1879. Page 45.
[2] Ibid., page 51.
[3] For an illustrated description of these various methods see American Journal of Obstetrics, June, July, August, and September, 1883.
[4] The Surgery of Deformities. By E. Noble Smith. London. Smith, Elder & Co. 1882. Pages 224-226.
[5] Transactions of the New York State Medical Society, 1863.
[6] Orthopædic Surgery and Diseases of Joints. By Lewis A. Sayre. New York. D. Appleton & Co. 1883. Page 483.