Supplementary rectal alimentation, and especially by defibrinated blood, as applicable to a large range of cases in which nutritive enemata have not heretofore been employed / by Andrew H. Smith.

SUPPLEMENTARY RECTAL ALIMENTATION, AND ESPECIALLY BY DEFIBRINATED BLOOD, AS APPLICABLE TO A LARGE RANGE OF CASES IN WHICH NUTRITIVE ENEMATA HAVE NOT HERETOFORE BEEN EMPLOYED

BY

ANDREW H. SMITH, M.D.,
PHYSICIAN TO ST. LUKES HOSPITAL

[REPRINTED FROM "ARCHIVES OF MEDICINE," APRIL, 1879]

NEW YORK
G. P. PUTNAM'S SONS
182 FIFTH AVENUE
1879

SUPPLEMENTARY RECTAL ALIMENTATION, AND ESPECIALLY BY DEFIBRINATED BLOOD, AS APPLICABLE TO A LARGE RANGE OF CASES IN WHICH NUTRITIVE ENEMATA HAVE NOT HERETOFORE BEEN EMPLOYED.*

By ANDREW H. SMITH, M.D.
PHYSICIAN TO ST. LUKE'S HOSPITAL.

IN contrasting the practice of medicine of to-day with that which prevailed fifty, forty, or even thirty years ago, the salient difference which is at once apparent, is in the prominence which is now given to the "supporting," instead of the former reducing treatment. Indeed, the period I have named has witnessed a complete revolution in the opinions and practice of the profession on this point. Forty years ago, inflammatory and febrile affections were very generally supposed to require antiphlogistic treatment, the lancet, calomel and antimony, and to these were added the lowering effect of the antiphlogistic regimen of which water gruel formed a prominent factor. At the present time, the term antiphlogistic treatment is obsolete, and with it the antiphlogistic regimen has became a thing of the past.

This is the result of a conviction, which, after the lapse of centuries of observation and study, has somewhat suddenly

* Read before the N. Y. Academy of Medicine, February 20th, 1879.

dawned upon the profession, that disease is a burden imposed upon the economy, which can be sustained and ultimately thrown off only by an expenditure of vital energy; and that in increasing, and not in diminishing vital force, are we furthering the reparative processes of nature.

At the present day, with the exception of diseases located in the digestive organs themselves, and which require rest of these organs from functual activity, there is scarcely any affection in which it is considered necessary to withhold the amount of nourishment which the stomach craves, while in very many cases benefit is thought to follow the administration of a much larger quantity than the patient desires. Even in surgical cases, occurring suddenly in persons previously in perfect health, the value of generous alimentation is recognized, and was ably advocated by Prof. Hamilton in a paper read before this body two years ago.

If then we considered the principle established, that the chances for recovery in the vast majority of cases, are promoted by keeping the nutrition as nearly as possible up to the normal standard, the question arises: How can this object best be obtained? There can be no hesitation in saying that the most natural means are the best, so long as they are adequate. If the stomach will take and digest sufficient food, and if the absorption and assimilation go on regularly and properly, there is no need for anything more, and there can be nothing better.

But there may be an obstacle to the introduction of food into the stomach, or to its passage beyond the pylorus; or there may be inflammation or ulceration of the stomach, causing ejection of the food; or from some reflex irritation vomiting without actual gastric disease, may occur to an extent to imperil life. For this class of cases, in which the function of the stomach is practically suspended, rectal alimentation is clearly indicated. I need only refer you to the

able and exhaustive paper read by Prof. Flint before the Academy in December, '77, for a complete discussion of this most interesting topic, as limited to this class of cases.

But it is the object of this paper to inquire whether nutritive enemata may not be useful in a great many other conditions, not as a substitute for, but as an aid to, stomach alimentation; and to answer this question as well as I can, by laying before you the experience acquired in about eighty cases treated in this way by myself and some of my friends during the past year.

There are a variety of conditions of the system that have this in common, that the stomach, though not the seat of structural change, is what is termed in popular language, *weak*. There is little desire for food, and the food that is acceptable is not of a nourishing character. If a larger amount of food is forced down, or if something more solid is taken, the result is either vomiting or the flatulence, or diarrhœa, which depend upon the passage of undigested food into the intestinal canal. But often these effects are not observed, for the want of appetite removes from the patient all temptation to go beyond his digestive power, and he is satisfied to abstain from the food for which he has so little relish. Thus he lives in a state of semi-starvation, and the ill-nourished tissues from lack of vitality too often fall a prey to structural degeneration.

This condition when standing by itself is recognized as atonic dyspepsia; but it is the accompaniment or result of a wide range of affections by which it is overshadowed, and which sometimes cause its importance to be overlooked.

Now, if poverty of blood is not the original occasion of the weak stomach, it very speedily becomes its result. Indeed, these two conditions necessarily act reciprocally as cause and effect. And the reason of this is plain. Weakness of the stomach, (and by the word stomach in this connect-

ion, I mean the whole alimentary apparatus), depriving the system of a portion of its necessary supply of nutritive material, must result in impoverishment of the blood; while a stomach whose nerves, muscular fibres and glands, are supplied with thin and watery blood must be irritable, must perform its muscular movements languidly, and must afford a weak and inefficient secretion for the solution of food, in other words must become weak. Thus we have a circle established, atonic dyspepsia producing poverty of the blood, poverty of the blood producing atonic dyspepsia.

I have lately read in one of our journals of a case in which, without any obvious cause, the heart's action was found to be growing weak. From hour to hour the pulse became feebler, and the ear applied to the chest heard the heart-beats fainter and fainter. There was no evidence of any internal hemorrhage; there was no brain lesion to paralyse the heart, no cardiac poison had been taken. The entire symptomology was summed up in the one expression, failure of the heart. All the stimulants given produced no effect, and the doctors could only stand by with finger on the pulse and note that life was fast going out. Why, they could not tell. The autopsy solved the riddle. In one of the coronary arteries was lodged an embolus, and the heart, upon which the whole frame depended for blood, was itself left bloodless.

How often is the stomach in like case? The whole system looks to it for nourishment; yet it is itself often nourished with such a beggarly quality of blood that, like the heart in the case I have cited, it has no longer strength to carry on its work.

This condition may, as I have remarked, stand by itself, but it is much more frequently the result of some other disorder, past or present. In these cases the blood may first be affected, and through it the stomach, or the stomach may suffer first, and through it the blood.

The blood is first affected in hemorrhages, protracted suppuration, in scrofula, phthisis, renal disease, etc., while the first attack is upon the stomach in diseases which are located in the organ itself, or which affect the nerves supplying it, or cause irritation in other organs which stand in intimate reflex relations to it, such as the uterus, the liver, and the brain.

The treatment of this condition as a complication is, of course, involved in that of the disease with which it is associated. But inasmuch as these diseases, when not actually incurable, are much more manageable if the nutrition can be maintained, it often becomes necessary to regard the defective action of the stomach as the principal feature in the case. In these cases, as well as when the condition is primary, the treatment has heretofore been narrowed down to three lines of procedure. We have endeavored to furnish to the debilitated stomach an aliment which would require the least possible digestion; or we have attempted to supply artificially the necessary digestive fluids; or we have tried by means of tonics, stimulants, hæmatics, etc., so to work upon the nervous and vascular supply of the stomach as to force a more vigorous action. The first of these attempts has resulted in the multitude of patent foods with which the market is flooded, in the use of cod-liver oil, in the consumption of alcohol as a food, and last, but not least, in that most pitiful of all delusions, beef-extract.

To the second we owe pepsin in its myriad forms, pancreatin, and lastly ingluvin, prepared from the gizzard of the domestic fowl, and five times as strong as pepsin; and we may prophesy with confidence that ere long we shall find upon our tables illuminated circulars, in the highest style of decorative art, announcing a new preparation, fifty times as strong as ingluvin, made from the gizzard of the ostrich. In the third, we employ, in short, the whole materia medica.

And there can be no doubt that by a judicious use of these agencies, together with suitable hygienic measures, a vast amount of good can be, and is, accomplished. Still we must all confess that there is yet much to be desired, and that any plan which promises to help us out of even a part of the difficulties which we meet in treating these constantly recurring cases, will be a welcome addition to our resources. For the condition of insufficient nutrition forms an important factor in almost all chronic diseases, and in many that are acute. Nay, it is the broad avenue by which death enters in those cases which terminate by exhaustion, and it aids also indirectly in the other modes of dissolution.

Such an addition to our resources as I have referred to is afforded, as I believe, by what I propose to call Supplementary Rectal Alimentation, that is to say, the use of rectal injections to supplement alimentation by the stomach.

The power of the rectum to absorb aliment has been so often demonstrated, and the demonstration has been so fully set forth before this body in the paper to which I have already referred, that time would be wasted in further argument to prove it. It remains only to consider whether the fact of such absorption can be turned to account in the class of cases now under discussion.

But here we are met at once by the question: If the stomach is in a great degree incapacitated for absorbing by the influence of some general condition of the system, will not that incapacity necessarily extend to the rectum also? To this I answer, without hesitation, No. The fallacy that lies in this question is in assuming that the conditions for simple absorption in the stomach and in the rectum are alike, while, in fact, they are as different as possible. The stomach is an exceedingly complex organ, not designed merely to afford a surface for absorption, nor yet simply to reduce solid aliment to a fluid form, but which has for a part

of its function to create, in many cases, new substances from the food presented to it. Thus, for example, albuminose is not a mere solution of the several nitrogenous principles of the food by the gastric juice, but a distinct principle in itself, the result of a recomposition of elements. It is only after the reactions have taken place, of which the above is an example, that stomach absorption begins, and if digestion in this sense is interrupted, absorption is also suspended. Moreover, the stomach is the centre to which reflex influences tend from many other organs and parts of the body, and as such is liable to derangement in sympathy with them. But with the rectum all this is different. It is scarcely more than a passive pouch, whose mucous surface absorbs fluids much as the serous surface and the subcutaneous connective tissues do. It suffers but little reflex disturbance from excitement elsewhere, and is comparatively insensitive to irritation within itself.

Theoretically, then, we might anticipate what has been practically demonstrated, that the rectum will continue to absorb aliment long after the stomach has refused to perform its office.

But then another question arises: Does the absorption of a certain amount of aliment by the rectum do anything more than to add so much nutritive material to the blood? Does it help at all toward restoring a natural condition of nutrition, and shall we not in any given case of a chronic character, stand just as much in need of such aid next week or next year as we do to-day? The answer is: In some cases, yes; in many cases, no. If the innutrition depends upon a cause which cannot be removed, a cause which might exist in a well-nourished body, doubtless the need for aid to the stomach will continue. But if the condition be one simply of weak stomach, and the stomach is weak only because its muscle and glands and nerves are supplied with an

impoverished blood, then every particle of aliment taken up from the rectum is absolutely curative. It helps to improve the condition of the blood, and its influence will be felt sooner in the stomach than anywhere else. The result will be improved appetite and better digestion, and the stomach will be brought nearer to the condition in which it can provide for its own necessities and for those of the system at large.

The result of a considerable number of cases in which transfusion of blood has been resorted to, to correct a condition of extreme innutrition, shows that a little extraneous aid is often all that is required to reverse the tendency of the system and to give it an upward instead of a downward direction. How little is the strength of the engineer compared to the power of the mighty engine under his charge; yet that little strength exerted to carry the balance-wheel beyond the "centre" may prevent a stoppage of the whole machinery.

At the same time the direct support to the system to be attained through nutritive enemata independently of any improvement of stomach digestion, is not to be despised as a temporary resource in acute cases. There are many times when the stomach suddenly gives out, or when its fullest powers are not equal to the unusual demand upon them, and in such cases nourishing injections may render invaluable aid.

If, then, the value of this method of alimentation be conceded, the question arises: What is the best material to be employed? Milk, raw eggs, animal broths, etc., are usually employed. Since the publication of Prof. Leube's paper on rectal alimentation in 1872, the preparation which he recommended has come largely into use, and to this Dr. Flint gives the preference. It consists of the muscle of beef, partly digested by an artificial process, and brought to a

sufficiently fluid condition to be administered by means of a syringe. Life has been sustained for periods of two or three weeks or longer with this preparation alone, and there can be no doubt that a considerable proportion of it is absorbed. Yet it is only imperfectly dissolved and semi-liquid flesh, containing a great deal of innutritious fibre, and, as such, appears to me to be greatly inferior to the perfectly fluid and wholly absorbable flesh which nature has prepared in the form of blood. It was while listening to Dr. Flint's paper that it occurred to me that in no other substance could we be so certain of finding all the elements of blood as in blood itself, and that it would be better to make use of it before it had become solidified into the form of flesh than to take the flesh and try to reduce it again to a liquid state. A few experiments convinced me that the blood was very readily absorbed by the rectum, the corpuscles being taken up as well as the serum. In experiments of this kind, blood presents the advantage of distinguishing itself by its color from the fecal matters in the dejections, and it is thus easy to form an idea of the amount voided. I soon found that in many persons an enema of 90 to 120 grams (3-4 ounces) of blood administered at night would be so completely absorbed in the course of eight or ten hours that no trace of it could be found in the morning evacuation, while larger quantites, such as 180, 240, or even in a few cases, 300 grams were retained, and the evacuation showed simply a small quantity of a dark red material of a tarry consistence mingled with the feces.

In order to retain the blood in a fluid state, it is necessary to have it defibrinated at the moment it is drawn. The proportion of solid matter lost in this way is not great, and if, as Virchow asserts, the fibrin of the blood is an excrementitious product, only waiting to be removed, the loss is in reality a gain.

The process of defibrinating is understood at all the slaughter-houses, where the blood so prepared is known as "stirred blood."

Seeing how readily the corpuscles as well as the serous elements of blood are taken up from the rectum, it appears to me self-evident that the material thus added to the circulation, either directly by capillary absortion, or indirectly by way of the lacteals, the receptaculum chyli and the thoracic duct must be more nearly homologous with the blood than would be the case if any other alimentary substance were employed. Nay, we may go further, and state that it is more nearly homologous than some of the products of stomach digestion. Chyle, for example, as we all know, is a white, milky fluid, widely different in its sensible qualities from blood, and very different in its chemical constitution. To convert it into living, active blood requires a process of elaboration, the steps of which have never been traced. How or where the transformation takes place we do not know. But it requires no argument to prove that a slight change must be more readily effected than a greater one, and that blood which has merely had its corpuscles dissolved presents the elements for the formation of living blood in a more readily available shape than a fluid so dissimilar as chyle, and *a fortiori*, as milk, eggs, or a solution of meat.

And here we are brought to the border of an unknown, unexplored territory. Libraries have been written on imperfect solution and absorption of nutritive material, but what do we know about imperfect conversion of what is absorbed into blood? Under what conditions may it arise, what relation may it have with fever, and to what extent may it not complicate the diseases which we are called upon every day to treat? As yet we can only conjecture, but into the void which exists in our knowledge, we may at least project this thought that the nearer the substances ab-

sorbed approach to the character of blood, the less chance there will be of imperfect conversion into the blood. And I fully believe that blood absorbed from the rectum nourishes the system more directly and more efficiently than if the same blood were swallowed and digested in the stomach; for, in the first case, it enters the circulation but little different from the blood with which it mingles, while in the second case it becomes chyme—the same as any other chyme, and subject to the same conditions of absorption.

In urgent cases, and especially when the stomach cannot be called upon to perform its office, defibrinated blood may be injected into the rectum in quantities of from 30 to 90 grams every two or three hours. For chronic cases, in which it is designed merely to aid stomach nutrition, from 90 to 180 grams may be given once or twice a day. Given at bedtime it usually causes no discomfort during the night, and there is only the customary evacuation after breakfast the next morning. If thought desirable, another injection may then be given, the recumbent position being maintained for a few minutes, after which, as a rule, there is no consciousness of anything unusual in the bowel, and the patient may go about his daily occupation. Any ordinary syringe may be employed, care being taken to cleanse it thoroughly each time without delay, lest the valves become adherent and fail to act. It is not necessary that the blood should be warmed in all cases. Many patients can bear it perfectly well without. But if the rectum is at all irritable, it is best to put the quantity of blood required into a small tin vessel, and set it into warm water until it has acquired about the temperature of the body. Warming the injection also promotes rapidity of absorption, and is therefore important when the supporting effect is required with as little delay as possible. As bearing upon this point the following experiments made last summer are of interest. I found that 8 grams of fl. Ext. of Rhubarb, in 20 grams of

water at a temperature of 22.8° C. (73°F.) gave in sixteen minutes, after being taken into the stomach the characteristic red color to the urine on the addition of caustic potash. Two trials of the same quantity at the same temperature injected into the rectum, gave sixty-five and seventy minutes respectively, as the time required to produce the same effect. When the temperature of the injection was raised to 42.2°C. (108°F.), the red color was obtained in forty minutes, while at a temperature of 36.6° C. (98°F.), forty-two minutes were required.

An important observation bearing upon the absorption of enemata, was made recently in my service at St. Luke's Hospital. A man with phthisis in the last stage, who was receiving every evening an injection of 120 grams of blood died suddenly at five A.M., eight or nine hours after the last enema had been given. The amount of the injection was not sufficient to half fill the rectum, yet at the autopsy Dr. Satterthwaite found that the large intestine was very evenly lined with a coating of thickened blood, for a distance of nearly three feet. Since then a case has come under my observation in which there is always a gurgling in the descending colon within a few minutes after the injection is received, indicating that the fluid is working its way upward. This is important as showing that even a small bulk of fluid thrown into the rectum spreads itself over a considerable absorbing surface. I am not aware that any other post-mortem observation of the character above mentioned has been made, indeed, with the substances usually employed for injections, it would be difficult to tell how far up they extended, since they could not be readily distinguished by their appearance from fecal matter.

The observation perhaps, explains a fact mentioned by the late Dr. Peaslee in the discussion upon Dr. Flint's paper, that he had often used the long tube in giving nutri-

tive enemata, but never found that any advantage resulted from carrying the injection into the colon. Of course, it would be superfluous to do so if the fluid finds its way there of itself within a short time after it is thrown into the rectum.

As might be expected, there are occasionally inconveniences attending this treatment, and which may be so serious as to compel its abandonment. In the first place the rectum may be so irritable that the injections will be immediately returned. This has happened only two or three times out of eighty cases, of which I have notes. Again, the injections may be retained for a while, but may produce severe colicky pains. Both these difficulties may sometimes be met successfully by giving the blood at first in very small quantities warmed, and with the addition of a little tincture of opium. The bowel usually becomes more tolerant by habit.

More or less constipation occurs in perhaps one-third of the cases. In a case related to me by Dr. Seguin, he was obliged to give up the treatment on account of a very fetid odor emanating from the person. This was also noticed in one of my cases but it continued only a few hours.

In another case in the practice of Dr. A. E. M. Purdy, the patient refused to go on with the treatment because, as she averred, she tasted the blood.

In two cases the discharges were so very offensive as to cause serious annoyance in the house. One of the patients was taking on his own responsibility 270 grams (9 ozs.) of blood every night. When the quantity was divided and half of it given in the morning, the difficulty nearly ceased.

In one case of ovarian neuralgia, not attended by anæmia, nervous irritability and insomnia were produced.

With these exceptions no cases have come to my knowledge in which the use of the blood has been attended by any ill effects.

The cases which I have treated, or of which I have notes

furnished by my friends, cover a pretty wide range of affections, in all of which asthenia was a prominent condition and presented the leading indication for treatment.

Naturally a considerable number of cases (about forty), were of pulmonary phthisis. This disease, perhaps more than any other, illustrates the reciprocal influence of an enfeebled stomach and impoverished blood. Whichever of these we regard as the cause, entails the other as its simultaneous effect. The tendency therefore, must inevitably be from bad to worse, unless in some way the stomach can be strengthened, so that it may afford an increased amount of pabulum to the blood, or the blood be enriched so that it may impart greater vigor to the stomach. The latter, we may hope to do in some measure by calling in the aid of the rectum, by which we may effect daily or more frequently, a modified transfusion of rich blood into the circulation.

But there is also, perhaps, no other disease in which it is so difficult to determine the effect of treatment. Under any plan the condition of the patient is liable to sudden changes. The occurrence of even a moderate hemorrhage will cause a considerable loss of weight which may be speedily regained under favorable conditions afterward. The same is true of intercurrent attacks of bronchitis, or of circumscribed pneumonia or pleurisy. An unfavorable change in the weather will aggravate the cough and wear down the strength and flesh, while an interval of warm dry weather will cause a general feeling of improvement and encouragment, and tip the scale again the other way.

Besides, nearly all hospital patients with phthisis improve during the first few weeks after admission, owing to the better hygienic and dietetic conditions by which they are surrounded. From all these considerations it is extremely unsafe to ascribe to a change of treatment, either the falling off or the improvemunt which may follow, unless the rela-

tion of cause and effect is evident. Still, if the inauguration of a new treatment is seen to be promptly followed in some by a diminution of night-sweats, in others by an improved appetite and a gain in weight, in others by lessened cough and refreshing sleep, and in others still by a better color and reviving strength, we cannot resist the inference that the treatment is upon the whole beneficial, although in some other cases it appeared to be without result.

Excluding as carefully as possible the effect of other favorable influences, it seems to me that the use of defibrinated blood has resulted in marked benefit in about one-half of the cases of phthisis, in which it has been tried, while in the remainder there has either been no improvement whatever, or none that could be confidently ascribed to the enemata. The test has been a severe one, inasmuch as in nearly every case the patient was already upon careful treatment with cod-liver oil, stimulants, tonics, quinine, etc., and the use of the blood was simply added to these. If, under these conditions, a prompt improvement has followed in a considerable number of cases, it would seem that a positive step in advance has been secured. I should hesitate perhaps, to claim such results on my own unsupported testimony. But they have been observed in the practice of others as well as myself, and even my cases were for the most part under the observation of the House Staff at St. Luke's.

Of these, one man in the third stage of phthisis who had been in hospital several weeks, and was constantly losing ground, suffered much less from sweating the night following his first injection, was entirely dry the third night, had gained a pound and a quarter at the end of the first week, and during the month which has elapsed since, has continued steadily improving.

Another, also in the third stage, who had been seven weeks in hospital, confined all the time to his bed, gained

six pounds in weight during the first fortnight after commencing the treatment, and a pound a week for the three succeeding weeks. In this case an extraordinary improvement of the appetite took place.

Another patient in the second stage maintained his weight while using the blood, but fell off a pound a week for the next three weeks after giving it up.

Another, a female patient, aged 28, entered hospital September 20th, first seen by me November 1st. Phthisis in first stage involving only right apex, but producing extreme constitutional irritation. Pulse 120, temperature high, cough very wearing, appetite entirely gone. Early in November she took to her bed and rapidly lost flesh, color and strength. Her treatment was arranged with great care to meet as far as possible every indication, but she steadily grew worse. About the first of December she began the injection of defibrinated blood, daily at bedtime. Within a week there was marked improvement. She began to gain flesh, her cheeks regained some color, her appetite returned, and her strength improved so that she sat up a little each day. The improvement continued steadily, and in six weeks she left the hospital, still coughing a good deal and with the physical signs not greatly changed, but much stouter and with a good color and a fair amount of strength.

In a case reported by Dr. Bayles to the Therapeutical Society, a girl, twelve years of age with phthisis, used the enemata of blood for a period of six weeks, at the end of which time the night sweats had ceased, the patient had begun to relish food, the cough had abated, and there had been a gain of four pounds in weight. She then went south, where she continues to improve in strength and spirits.

Case reported by Dr. A. E. M. Purdy. A young gentleman suffering phthisis in the second stage, came to this city from his home in Chicago, intending to go from here to San Antonio,

Texas, for change of climate. He had a diarrhœa supposed to be tubercular, which had resisted all treatment in Chicago, and which became so much worse while here that he was unable to resume his journey. All the means usually employed in such cases were tried by Dr. P. without success. An injection of 45 grams of blood was then ordered twice a day, increased the second day to 120 grams three times a day. In twenty-four hours from that time the diarrhœa had ceased and constipation was produced. In five days the patient was so much stronger that he started again on his journey.

Case reported by Dr. O. B. Douglas. Patient, a lady 22 years of age. Tubercular deposit in upper lobe of right lung. She coughed badly, was greatly emaciated, had no appetite, vomitted frequently, slept but poorly, and had exhausting night sweats. Pulse 132, axillary morning temperature 38.7°, respiration 36. December 8th, 1878, ordered 90 grams of blood by enema twice a day. She coughed less and slept better the night following. December 11th, a marked improvement in every particular, especially in her relish for food. Increased the injections gradually to 150 grams twice, and subsequently three times a day. January 13th, the following is noted:

"From a state of great nervous debility and mental depression, without a hope of recovery, the patient has become hopeful and cheerful, coughs less, sleeps and eats better, weight increased five pounds. The discharges seldom show traces of blood, and the odor is never more than ordinarily offensive."

I have treated quite a number of cases of simple anæmia by enemata of blood, and have had excellent results in all but one. In this case I suspect that congenital arterial hypoplasia exists, as the patient has been remarkable from her childhood for her extraordinary palor. No treatment seems ever to have been of real service to her.

The other cases were, without exception, strikingly benefited, and indeed these are precisely the cases to which the treatment is, theoretically at least, most applicable.

In one of my cases, the patient, aged 23, had had a siege of ague, lasting several months, which had completely broken him down. Anæmic bruit and venous hum were present to

a typical degree. Chalybeates were purposely withheld, and enemata of blood administered twice a day. His color rapidly improved, and in a fortnight the bruit and hum had entirely disappeared.

Two other cases in females, both exceedingly well marked, were treated by the injections alone, with only an occasional dose of medicine to meet some passing indication, and made satisfactory recoveries, one of them remaining in hospital only thirty-four days.

The following case is taken from the Transactions of the Therapeutical Society, April, 1878:

Mrs. S., aged 26, was confined three months ago, and suffered from protracted hemorrhage, extending through several weeks. Came under my care March 16th, 1878. Is anæmic to the last degree; face tallowy white, lips almost bloodless; pulse ninety-six, and very small; can walk but a few steps at a time; has not been down-stairs since her confinement; complains of shortness of breath, giddiness, and mental confusion; is very despondent; has an absolute disgust for solid food, and vomits it if taken; has been living principally upon beef-tea, milk and lime-water.

Pepsin and simple bitter tonics were prescribed with little if any benefit. On the 19th of March began the use of enemata of blood. 120 grams were taken three times a day. Patient retained the injection, the bowels on one occasion not being moved for forty-eight hours.

There was very prompt improvement in strength; within a week she was able to go out-of-doors and walk several blocks. The lips and conjunctivæ regained their color, the stomach became less irritable, the vertigo disappeared, and, in less than three weeks, the only traces of her illness remaining were some shortness of breath when going up-stairs and occasional nausea after a full meal.

On several occasions the use of the blood was omitted for a short time, and she immediately felt a decline of strength and spirits.

This patient had been under the care of a very intelligent practitioner for three months before I saw her, and it is fair to presume that the usual means for correcting anæmia had been employed. While under my care she had very little treatment except the ene-

mata, and it seems to me that her improvement is to be attributed chiefly to their use.

A gentleman, aged 68, a Doctor of Divinity, was sent to me in November last by Dr. Webster for a tormenting cough and dyspnœa, for which he had had a great deal of throat treatment. I found almost complete obliteration of the right pleural cavity, and on inquiry elicited the history of a pleurisy with effusion two years ago.

The lung had been compressed, and was bound by firm adhesions to the spine, so that it could not expand when the effusion was absorbed. The chest was greatly contracted, and the diaphragm so drawn up that the lower border of the liver was nearly on a level with the nipple. The breathing was almost wholly with the left lung. The shortness of breath, due to this cause, was increased by a profound anæmia, the result of the general derangement of health, so that the breathing was between sixty and seventy per minute. The lips and the conjunctivæ of the lids were white, and there was œdema of the feet and legs. The appetite was completely gone, and the patient was in about as wretched a plight as possible. Realizing that medicine would do very little toward re-expanding the lung, and that the shortness of breath, which constituted the principal discomfort, was greatly increased by the watery condition of the blood, I recommended no medicine whatever, but only a simple and nutritious diet, and an injection of a teacupful of blood every night. This course he pursued, except that instead of about 150 grams (5 ozs.), which I meant him to take, he divided the very liberal pint which the butcher sent him every second day into two parts, and took in reality each night about 270 grams. This quantity was perfectly well retained, but there was some fluid blood in the evacuation next morning, and the odor from the dejections pervaded the whole house. He improved, however, and in two weeks wrote me that the swelling of the feet and legs was gone, and that the appetite was better. A few days later I saw him, and on learning the quantity of the injections, directed that half the amount should be taken at night and the remainder in the morning. This did away with the nuisance referred to, and at the next report the breathing was better. He gained decidedly in strength for some time, and finally determined to stop the injections for a week and see what the effect would be. His last enema was taken Saturday evening, but by the Thursday following he was obliged to renew the treat-

ment. His appetite had left him entirely, and a little food forced down on Tuesday was vomited. He could not sleep, his breathing became again very rapid, and the œdema about the ankles returned. Wednesday and Thursday he ate nothing but a little gruel. His son then interposed, and went himself for the blood, and Thursday evening the treatment was resumed. That night the patient slept comfortably, and when I saw him on Friday morning he had taken with appetite a light breakfast. This was four days ago, and I received a card from him to day, the 18th saying that he slept well last night, and was feeling encouraged.

Supplemental rectal alimentation ought, theoretically, to be useful in dyspepsia, whether atonic or depending upon gastritis; in the first case for the reasons already dwelt upon at length, and in the second as giving to the inflamed organ partial rest. A case of atonic dyspepsia treated in this way very successfully, occurred in my private practice within the past few months. The patient, a young man about 22 years of age, of rigidly temperate habits, began last spring to run down, and soon lost the power of digesting solid food. The smallest quantity taken into the stomach brought on vomiting. He rapidly lost flesh and strength, and his appearance was that of a person far advanced in consumption. There was a good deal of epigastric pain and tenderness, but the pain did not run through to the back, and he had never vomited blood. The tongue was pale and but little furred. This was his condition when I first saw him in December. No medicine was ordered, but he was directed to take a teacupful of blood by the rectum twice a day, and to apply a belladonna plaster over the stomach. The epigastric pain and the vomiting ceased within two or three days, and solid food was taken without inconvenience. In seventeen days he gained eleven and a-half pounds in weight.

Dr. George Bayles reported recently to the Therapeutical Society, a case of dyspepsia in which the vomiting was so constant and severe, that disease of the pylorus was sus-

pected. For nearly nine weeks he was nourished wholly by injections of bullock's blood, only a little claret and water, toast-water, or tea with milk, being taken by the mouth. At the end of this time it was found that he gained in weight, and he has had no trouble since from dyspepsia.

The following case of dyspeptic asthma occurred in my private practice.

MR. R., 30 years of age, partner in a coffee importing house, of weakly frame but possessed of intense nervous energy, and a ceaselessly active temperament, his attention closely devoted to business, has been for some years subject to frequent and severe attacks of dyspeptic asthma, which leave him greatly prostrated. He often scarcely recovers from one attack before another comes on. This was his condition in the early part of last summer. Whatever good effects drugs may have produced seemed to be exhausted. I had tried every possible line of treatment, and in his frequent business trips he had consulted many other physicians in other cities. But with the demands which his business made upon him, it was scarcely possible that permanent good could result from any medication. Still, with the hope of enabling him better to withstand the wear and tear during the hot season which was approaching, I ordered for him injections of blood twice daily. He gradually increased the quantity until he used 480 grams (1 pint) a day. The treatment resulted in a prompt and decided improvement in all his symptoms. His appetite which before was capricious and irregular, became excellent, and although he continued at his business through all the hot weather, sleeping in town, and taking his meals at restaurants, he gained about eight pounds in weight, and enjoyed complete immunity from asthma. Finally, however, he got to be troubled with severe constipation, notwithstanding the amount of fluid thrown into the bowel daily, and the annoyance from this induced him to give up the treatment. Since then he has held his vantage ground in part, but he is slowly slipping back into his former condition.

The following is one of my cases transcribed from the records of St. Luke's Hospital.

Patient, William T., four and a-half years of age, was admitted October 21st, 1878. For five or six months had been running

down without assignable cause. Examination shows extreme emaciation, anæmia, enlarged liver, veins of abdomen injected, and stomach distended. Ordered: Syr. Ferri Iodid. Ext. of Malt.

November 1st.—Improving in general appearance.

January 1st.—For some days patient has been vomiting nearly everything taken into the stomach. Ordered, milk diet.

January 23d.—Not materially improving, though vomits less frequently. Patient weighs 8.5 kilos (23 lbs.) without clothes. Ordered, enemata of defibrinated beef blood, 60 grams (℥ ij) t. i. d.

January 31st.—Weighs 9.1 kilos (24½ lbs.); looking much better; running about the ward.

February 8th.—Weighs 9.44 kilos (25½ lbs.). Lips red; cheeks filled out and rosy; abdomen less distended; and in every way patient looks a healthy child.

If neuralgia is, as Romberg has elegantly expressed it, "the prayer of a nerve for healthy blood," it should offer a promising field for the treatment in question.

My own experience on the subject is very small and inconclusive. Dr. Bayles, however, has reported to the Therapeutical Society two cases of inveterate neuralgia, apparently inherited, which were greatly relieved in this way. The paroxysms were rendered much shorter and less severe. Both patients increased in weight, one 1.85 kilos (5 lbs.) in six weeks, and the other 1 kilo in the same time.

The following case of nervous exhaustion is from my private practice:

Patient, a lady, aged about 40 years. Constitution broken six years ago by prolonged ulceration of the rectum and fistula in ano. Has had frequent attacks of dysentery since. Last winter was sick for three months with a low nervous fever, which left her in a state of extreme debility. She had pain and tenderness in the epigastrium, no appetite, insomnia, giddiness, palpitation, tinnitus, and spectral illusions. Ordered 150 grams (5 ozs.) of blood by enema twice daily. This produced an immediate effect. The epigastric pain and tenderness disappeared within a few days, and sleep and appetite returned. The giddiness and palpitation soon ceased, but the tinnitus and spectral illusions continued for several

weeks. In a month she had recovered so much strength that she could row for a short time each day. No medicine was taken. She returned to town in October much improved in flesh and better than she had been for years. She was then subjected to a great drain upon her strength in settling a new house, and in the midst of it had one of her attacks of dysentery. This was promptly checked, but it left her with many of her former symptoms. She resorted again to the enemata with immediate and marked benefit, and in three or four weeks, although surrounded by very unfavorable influences, she regained all she had lost.

The following case can scarcely be called one of *supplementary* alimentation by the rectum, since the stomach did almost nothing; but it is introduced here to show the nutritive value of blood as a material for injections, and what may be accomplished with it, with almost no aid from the stomach.

PAULINA S., about 18 years of age, patient at St. Luke's Hospital, entered July 22, 1878, with some pulmonary trouble. Soon after developed symptoms of gastric ulcer, and was kept for a long time on milk diet. Finally even this was rejected, and for two weeks previous to the 1st of November she had been nourished entirely by enemata of defibrinated blood, ordered by Dr. Wheelock. At first she did well, but after a few days began to fail, and when I saw her she was apparently moribund. She was in a state of semi-consciousness, lying with the eyes half open, the corneæ glazed and the conjunctivæ injected, the tongue dry and the teeth covered with sordes, presenting the appearance of a person in the last stage of typhoid fever. The pulse was barely perceptible. She was then receiving by injection 90 grams (3 ozs.) of blood every three hours and 30 grams (1 oz.) of brandy. On inquiry it was ascertained that the blood and brandy were mixed and injected together, thus causing coagulation of the albumen and unfitting the blood for absorption. This was corrected, the blood being given alone, and an occasional teaspoonful of brandy and milk being administered by the mouth. The following day I found an astonishing improvement. Complete consciousness was restored, the countenance was bright, and there was a pulse which, though very frequent, could be easily counted. From this time recovery progressed rapidly. Brandy and milk were allowed in small quan-

tities by the mouth, and gradually other things were added, until at the end of two weeks she was placed on full diet, and on Dec. 11th was discharged cured.

Case reported by Dr. Hanks.

Patient, MRS. B., U. S., age 33 years, mother of two children. Has never been rugged, but has generally been able to superintend her household. Has always been of a pale complexion, but has had a good appetite, and slept well.

July 29th, 1878.—I was called to prescribe for her, on account of a profuse and long-continued menstrual flow. I found her extremely weak and apparently nearly exsanguinated, with a rapid feeble pulse of 110, temperature 37.7° C. (99°), respiration 24. A constant flow of thin red blood from vagina. This has continued for one week. Her last menstrual flow was also of long duration.

The uterus was found retroverted in the second degree. The displacement was corrected, and warm salt water injections *per vaginam* were ordered. On the following day the flow still continued, and the patient was hardly able to raise her head from the pillow without fainting.

Pulse still rapid and feeble, temperature normal. A liberal allowance of brandy was ordered, and aromatic sulph. acid and morphine in small doses.

August 1st.—Same condition, pulse 120, temperature 38.3° C. (101°), vomits all food taken, ordered 120 to 180 grams (4 to 6 ozs.) of fluid beef's blood *per rectum*, three times per day.

August 2d.—Pulse and temperature the same. Patient looks and feels better. Injections have caused no pain nor uneasiness. Same treatment to be continued.

August 5th.—Patient improving, same treatment.

August 13.—Has continued the injections of blood until to-day. Has taken some food *viâ naturalis*, during the week. Has improved steadily during the use of the injections.

I might add many other cases in which the success of this method of alimentation has been more or less striking, but I will not occupy more of the time of the meeting. I cannot close better than by quoting from a recent report of the Committee on Restoratives of the Therapeutical Society.

The report concludes as follows:

"From the facts before them the Committee feel warranted in the following conclusions:

"1. That defibrinated blood is admirably adapted for use for rectal alimentation.

"2. That in doses of 60 to 180 grams (2 to 6 ozs.) it is usually retained without any inconvenience, and is frequently so completely absorbed, that very little trace of it can be discovered in the dejections.

"3. That administered in this way once or twice a day, it produces in about one-third of the cases for the first few days, more or less constipation of the bowels.

"4. That in a small proportion of cases, the constipation persists and even becomes more decided the longer the enemata are continued.

"5. That in a very small percentage of cases irritability of the bowels attends its protracted use.

"6. That it is a valuable aid to the stomach, whenever the latter is inadequate to a complete nutrition of the system.

"7. That its use is indicated in all cases not involving the large intestines, and requiring a tonic influence which cannot readily be obtained by remedies employed in the usual way.

"8. That in favorable cases it is capable of giving an impulse to nutrition, which is rarely, if ever obtained from the employment of other remedies.

"9. That its use is wholly unattended by danger."