History of the discovery and mode of application of the liquid adhesive plaster : or ethereal solution of prepared cotton, originally applied to surgery / by J.P. Maynard ; with surgical cases treated, and testimonials from J. Mason Warren of Boston, and Dr. Whitney of Dedham.

MAYNARD
APPLICATION OF LIQUID
ADHESIVE PLASTER

U.S. Depar
ton, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Depar
ton, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Department of
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Department of
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Department of
NAT
Health Service
Health, Education,
NATIONAL LIBRARY OF MEDICINE
Health Service
Health, Education,
NATIONAL LIBRARY OF MEDICINE
Health Service
Health, Education,
NAT
and Welfare, Public
NATIONAL LIBRARY OF MEDICINE
and Welfare, Public
NATIONAL LIBRARY OF MEDICINE
and Welfare, Public
NAT
Health, Education,
Health Service
NATIONAL LIBRARY OF MEDICINE
Health, Education,
Health Service
NATIONAL LIBRARY OF MEDICINE
Health, Education,
Health Service
NAT
U.S. Department of
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Department of
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE
U.S. Department of
Washington, D.C.
NAT
Washington, D.C.
U.S. Department of
NATIONAL LIBRARY OF MEDICINE
Washington, D.C.
U.S. Department of
NATIONAL LIBRARY OF MEDICINE
Washington, D.C.
U.S. Department of
Health Service
Health, Education,
NATIONAL LIBRARY OF MEDICINE
Health Service
Health, Education,
NATIONAL LIBRARY OF MEDICINE
Health Service
Health, Education,
NAT

HISTORY OF THE DISCOVERY

AND

MODE OF APPLICATION

OF THE

LIQUID ADHESIVE PLASTER,

OR

Ethereal Solution of Prepared Cotton,

ORIGINALLY APPLIED TO SURGERY BY J. P. MAYNARD.

WITH

SURGICAL CASES TREATED,

AND

TESTIMONIALS FROM DR. J. MASON WARREN, OF BOSTON, AND DR. WHITNEY, OF DEDHAM.

J. P. Maynard

BOSTON:

PUBLISHED BY MAYNARD & NOYES,
WHOLESALE DRUGGISTS.

1848.

☞ The subscribers have received from Mr. J. P. MAYNARD his formula for preparing the Liquid Adhesive Plaster, and having completed their arrangements for its manufacture, are now prepared to furnish it to Druggists and the Medical Profession, on liberal terms.

MAYNARD & NOYES,

Wholesale Druggists,

No. 11 Merchants' Row, Boston.

THE LIQUID ADHESIVE PLASTER.

A Communication addressed to JOHN D. FISHER, M. D., *of Boston, by* JOHN P. MAYNARD, *and read before the Boston Society for Medical Improvement, March* 27, 1848.

DR. JOHN D. FISHER,

DEAR SIR,—Some time last summer, when you were at Dedham, you requested me, as you may recollect, to furnish you with some account of a liquid adhesive plaster which I had been using in surgical operations, with permission for you to read it before the Boston Society for Medical Improvement. Although I had at that time made many experiments with the new adhesive substance, and had formed a very favorable opinion of its properties, still I did not feel willing to express this opinion in a paper to be read before the above learned Society, until I had perfected the manufacture of the substance itself, and employed it in surgical cases sufficiently numerous and various, to determine its true adhesive qualities and real importance to surgical and medical science. Consequently time passed on, and I had really forgotten the request you had made, until I was reminded of it by reading in some Journal, a day or two ago, the announcement that my friend and fellow student, Mr. Samuel L. Bigelow, had written a paper on the subject of the new adhesive material, and that his paper was read before the Society for Medical Improvement by one of its members at its last meeting. This circumstance has induced me to address you this communication, in compliance with the suggestion you made to me last summer, which commu-

nication I submit to your disposal. As I shall in this letter speak of the nature and the history of the application of this new adhesive fluid, it is very possible that I may repeat some things that have already been said on the subject by Mr. Bigelow. Should this be the case, my total ignorance of the contents of Mr. B.'s paper must be my apology.

While attending the medical lectures in Boston the winter before the last, Mr. Bigelow showed me a liquid which he was using as a varnish, and informed me, that it was made by dissolving "gun-cotton" in sulphuric ether, and that he obtained the directions for making it from Dr. Charles T. Jackson. Having at this time occasion to use some varnish for a purpose to which the common varnishes of the shops were found by experiment not to be applicable, and noticing that this "gun-cotton" varnish dried suddenly, and became hard, transparent and glossy, it occurred to me that it might answer the purpose I had in view. I therefore requested Mr. Bigelow to furnish me with a small quantity of the liquid. The quantity he kindly gave me. I made experiments with it as a varnish, but soon discovered that it would not answer the object I had in view. For instead of improving and protecting the gilded surface, as I had hoped it would, it destroyed it, probably by the action of the acid it contained. While making this application of the varnish, my fingers became covered with it, and I noticed that my index and middle fingers were so firmly glued together by the varnish, that it required a considerable degree of force to separate them.

This accidental occurrence at once suggested to me the idea that this fluid, as it suddenly became solid, and seemed to possess an adhesive tenacity unequalled by any known gum, might be made use of as an elegant and effective substitute for the common adhesive plaster, and become an important agent in surgery. Impressed with

this idea, I made experiments with it on my own person; first, by spreading the fluid over the surfaces of two of my fingers with a small brush, and allowing it to dry while the fingers were in contact; and second, by moistening straps of cotton cloth and of sheep-skin with the liquid, and applying them on the back of my hand. The fingers were soon found to be glued together somewhat firmly, and the cotton and sheep-skin straps to adhere strongly to the parts on which they were applied. These simple experiments convinced me, that the substance would answer as an adhesive plaster in incised wounds, and I used it as such on a little niece of mine, who had cut her finger, and then on my own hand which had been accidentally wounded. In both of these instances it proved perfectly successful, keeping the incised surfaces together until they healed. The fluid was used in these cases in the following manner:—It was spread by means of a brush over the approximated edges of the wound, and also over the sound skin, on each side, and a thin strap of cotton cloth was pressed upon it, which soon became firmly united to the surface, by the evaporation of the ether, retaining the cut edges immovably together. The wounds in these cases healed by the first intention, and the straps were not removed until perfect and solid union had taken place.

These I believe to be the first surgical applications that were ever made with this new adhesive mixture. Feeling somewhat elated by the success of the experiments, and by the idea that I had made a discovery that might prove of value in operative surgery, I informed Mr. Bigelow that I had discovered a new and important application for his "gun-cotton varnish," and related the experiments I had made. Some time after this, he told me that he had made use of his varnish, as I had previously done, in surgical operations, and with success. The experiments I had made exhausted the small quantity

of the varnish that had been given me, and to obtain more I was obliged to attempt the manufacture of it by dissolving the gun-cotton in ether, according to the formula furnished me by Mr. Bigelow. But on trial I found that gun-cotton dissolved in ether would not produce the desired gum. Being in Dedham at the time, I wrote a note to Mr. Bigelow, mentioning the failure of my attempts to re-produce the article, and requested him to give me particular directions how to make it. In answer to my note, Mr. B. stated that he, like myself, had been unsuccessful in his efforts to make "gun-cotton" yield a gum such as he had before used and given me. I now determined to make experiments with the view of effecting the re-production of the adhesive solution. I accordingly obtained, from the city, a large quantity of acids, and commenced the preparation of the raw cotton, and after many trials and many failures I finally succeeded in preparing a cotton, which would dissolve in ether and form a gum of greater adhesive qualities than that I had been using.

In this connection I may observe that in attempting, at a subsequent period, to make more of the article, I failed, having mislaid my notes specifying the exact proportions of the acids previously used, and the length of time required for them to act upon the raw cotton. Consequently I was compelled to repeat my experiments in order to re-produce "the ethereal solution of prepared cotton." I call the adhesive liquid by this name, rather than by that of solution of gun-cotton, for the reason that I have never been able to produce the article from gun-cotton. Pure gun-cotton will readily dissolve in ether, but the solution possesses no, or only very slight, adhesive properties.

Having now at command any desirable amount of this new adhesive preparation, I made it a business to investigate its usefulness in the healing art, by employing it

myself, and engaging others to experiment with it. Dr. Whitney, of Dedham, was furnished with some of the solution soon after I had prepared it; and Dr. Fisher of Boston, Dr. Warren of Waltham, Dr. Clarke of East Cambridge, Dr. Comstock (now residing in Wrentham), and a few others, were supplied with it, some eight or ten months ago. In July or August last, Dr. John C. Warren was informed of its nature and properties by Dr. Fisher, and recently I gave some of it to Dr. J. Mason Warren, who used it in his private practice, and afterwards in the Massachusetts General Hospital. Previous to the commencement of the last course of medical lectures in Boston, I had used it and seen it used by my instructor, Dr. Whitney, in more than a hundred cases of surgery, some of which were of a serious nature; and in these cases it was most successfully employed, and was found to possess great advantages over the common adhesive plaster of the shops. On a future occasion I intend to draw up a detailed report of the cases in which the liquid adhesive plaster has been used by Dr. Whitney, myself, and some other practitioners who have employed it in their surgical and medical practice. To do this now, would require more time than I have at command. I will, therefore, at present, merely state that the preparation has been employed by Dr. Whitney and myself, with the most gratifying results, in cases of incised wounds; in fractures of the fingers, in which it performed the office of an immovable bandage; in a case of hernia occurring in a child; in cases of deep ulcers, in which it was desired to approximate the surfaces of the sores for the purpose of hastening the process of granulation; in four cases of amputation of fingers, accidentally caused by a circular saw, and other cutting instruments; in cases of burns, attended by loss of substance; in two cases of enlarged testicle, accompanied by an effusion into the scrotum; in the case of an operation on

the face of a young lady, for the cure of a deformity resulting from a severe burn; in the case of a wound in the scalp, made by extirpating a wen from the head. These are some of the surgical cases in which I have witnessed the successful application of the cotton plaster. The mode in which it was used as a dressing in these cases, varied according to the nature, size, and situation of the wound. In slight cuts, a moderately thick coating of the solution laid over the incised parts was, on becoming dry, sufficient to keep the lips of the wound in position till union took place; but in most instances it was employed in conjunction with straps of cotton and sheep-skin, and with raw cotton, forming with them strong, unyielding, adhesive straps, bandages and encasements; and after many experiments, I am convinced that this is the best and most effectual way in which it can be employed as an adhesive agent in surgery. The solution dries rapidly, and in a few seconds, by the evaporation of the ether it contains, it becomes solid and impermeable to water—and a strap moistened with it and glued to any part of the cutaneous surface, adheres to it with a tenacity that is truly surprising.

In proof of this, I will mention the following facts. A strap of sheep-skin, glued to the hand by a thin layer of the solution, nine lines long and one and a half wide, sustained a weight of two pounds. A second strap, attached to the hand by a layer of the substance, nine lines in length and three in width, sustained a weight of three pounds. A third strap, fixed to the hand by a layer of the liquid, twelve lines square, resisted the force of ten pounds without giving way; and a fourth strap of the leather, glued to the hand by a stratum of the solution, measuring one and three-fourths of an inch in length and one in width, was not separated from its attachment by the gravity of twenty pounds! These statements may appear incredible; but they are founded on exact and

carefully performed experiments, and are true. No other known gum possesses such adhesive power as these experiments show this cotton gum to be endowed with. No adhesive plaster hitherto used in surgery is to be compared to it in this respect. It therefore can be made use of in cases in which the common adhesive plaster would be useless.

The wonderful adhesive properties which my experiments proved it to possess, suggested the thought that it might answer the purpose of sutures in surgery. And an opportunity soon occurred to enable me to decide the fact that it would. I allude to the operation performed by Dr. Whitney, for the removal of a wen from the head. Fearing that an erysipelatous inflammation might arise in the scalp, in case he united the divided parts by sutures, Dr. W. shaved the hair from the raised scalp, and by means of the cotton solution he glued some short and narrow straps of sheep-skin on each flap, a short distance from their edge. These straps were then drawn towards each other until the edges of the wound were brought into close and exact union, and the free ends of the straps were fastened together by sutures. In this case the needle and thread were passed through inanimate leather instead of living flesh, causing no pain to the patient and no interruption of the process of healing. The wound healed favorably, and without the usual accidents necessarily occasioned by the presence of sutures in, and the operation for their removal from the parts. The happy result of this case convinced me that a means was now discovered which would enable the surgeon to do away with sutures, pins and needles, in most of the cases in which these are at present considered indispensable.

Although unauthorized to do so, I must take the liberty, in this place, to mention the interesting fact that Dr. Comstock, of Wrentham, has recently employed this liquid as a dressing in a case of extensive laceration of the perineum,

with a success that he thinks never attended any other mode of management. The dressings remained firmly attached and solid during the process of healing, notwithstanding they were for a time almost constantly covered by urine and mucus, and subject to being displaced by the movements of the patient. This case, I trust, will be communicated to the profession, as it supports the opinion I have advanced that this new adhesive solution will be used as a substitute for sutures and needles.

From the success that attended these two last-mentioned operations, every surgeon and practitioner will readily imagine how effectual and valuable this new dressing must be, in cases where there is great loss of substance—in operations for hare-lip, artificial nose, &c. But I will not attempt to predict the cases in which this new adhesive substance may hereafter be successfully employed. I prefer to speak of it only in connection with cases in which its value has been tested. Future experiments must determine the applications that can be made of it in surgery, and its true value to medical science. As a varnish, it may be useful in the arts—and has been found to afford protection to the fingers and hands while engaged in dissections and autopsic examinations. It was used for such a purpose last summer by Dr. Whitney and myself. I might also speak of the applications that have been made with it in medical practice, as in cases of burns, of eruptive diseases, of sore nipples, &c.; but I must bring this long and hastily-written letter to a close. In it I have given you a true and faithful history of this new adhesive agent, so far as I am connected with or have any knowledge of it.

Yours, &c.

JOHN P. MAYNARD.

Dedham, March 18, 1848.

SURGICAL CASES TREATED BY MAYNARD'S LIQUID ADHESIVE PLASTER.

[Communicated to the Boston Medical and Surgical Journal.]

For more than a year I have been making experiments with the adhesive solution of prepared cotton, some account of which I lately communicated to the readers of your Journal. The cases in which this new adhesive liquid has been surgically applied, have been over a hundred. Some of these cases I propose to communicate, from time to time, to you for publication. As you have but a small space in the Journal of this week that can be appropriated to my purpose, I shall, at this time, speak only of two or three cases, and of these very briefly. Previous to the month of April, 1847, I had used the new plaster in many minor cases of surgery. These cases were important, as they proved the value of the new dressings with which they were treated, but beyond this they offer nothing of interest.

The first case of particular interest, and which is worthy of being recorded, is the following. About a year ago a mechanic came into the office where I was studying, and stated that one of his fingers had been crushed by the fall of a bar of iron upon it, and that it must be amputated. On examining the finger, which was the middle one of the left hand, I found that the flesh had been extensively torn and lacerated, and that the bone had been laid bare. As no proper care had been taken of the wound, it was studded in many points with unhealthy or fungous granulations. Believing that the finger might be saved if properly treated, I refused to amputate it, and proceeded to dress it with the adhesive liquid. The morbid granulations were touched with

the nitrate of silver, and the wound thoroughly cleansed. Having prepared a sufficient number of strips of cotton cloth, I attached the end of one of them to the palmar surface of the finger by means of the adhesive liquid. The strap was then carried over the wounded finger in such a manner as to restore the parts to their natural position, and its free extremity was attached to the opposite side of the finger. Other straps were applied in the same manner, until the finger was surrounded with a succession of these adhesive straps. In the course of a few minutes the dressings became dry by the evaporation of the ether contained in the adhesive solution, and constituted a firm and inelastic casing to the wounded finger. The patient expressed great relief from the almost constant pain he had suffered since the date of the injury, and on the next day he resumed his employment, which was that of a carpenter. Expecting that suppuration would take place in the wound, and that pus might accumulate under the dressing and give pain, I gave the patient directions to puncture, with a common pen-knife or needle, that part of the bandage where the pus might show itself. I also directed him to loosen or even remove the dressing by a pen-knife, in case the finger should swell and cause insufferable pain, and to report to me the condition of his wound in three or four days. I heard nothing from him for the space of three or four weeks, when I learnt from him that he had experienced no pain or trouble in this finger since it was dressed by me, and that the dressing had never been removed until the wound had perfectly healed.

The next case treated by the new adhesive liquid, that is worthy of notice, was that of a gentleman who received a kick from a horse in May, 1847, on the front of the right leg below the knee. The flesh was badly lacerated, and the tibia exposed. The patient suffered much pain, and expressed himself as unable to move his limb.

The wound was dressed, in the course of an hour from the time it was inflicted, in the following manner. The parts were first cleared from blood, the edges of the wound were placed in near apposition, and the whole wound was moistened with a thin coating of the cotton solution, by means of a hair pencil. A thin layer of raw cotton was then laid over the surface and agglutinated by a fresh addition of the adhesive solution. The integuments were thus supported and protected, and the patient was enabled to walk immediately without much trouble. In this case suppuration took place, and the bandages were occasionally removed and re-applied. The wound healed favorably, and the patient was not confined any day to his house.

JOHN P. MAYNARD.

TESTIMONIALS.

The following testimonial recently received from Dr. Warren, Surgeon, of this city, embraces several interesting and important facts connected with the use of the Liquid Adhesive Plaster; and it is believed the views expressed by him will accord with the experience of every Surgeon and Physician who may adopt the use of it.

Boston, May 4, 1848.

Messrs. Maynard & Noyes:

Gentlemen,—I received a few days since your letter asking me to give you the result of my experience in the use of the Liquid Adhesive Plaster, or Ethereal Solution of Prepared Cotton, and it will afford me much pleasure to do so. For the last two or three months, I have had occasion to use this substance in a considerable number of cases, both in public and private practice, and I have found it in many instances an excellent substitute for the adhesive plasters in common use. The cases in which I have employed it, and to which it has seemed to be most peculiarly adapted, have been the following.

In hare-lip, after a single suture was taken to preserve the red line of the lip, the solution was used on the remainder of the wound, and left undisturbed for some days, when the union was found to be quite perfect, and the scar less evident than after the ordinary method of proceeding.

In one or two cases of wounds made in the removal of small tumors of the face, where it is so desirable to avoid a scar, the linear cicatrix left after the adhesion was scarcely perceptible. In some larger wounds, a number of inches in extent, in which I have tried it for the sake of experiment, the effect has been the same.

I have also found it quite convenient as an application to small punctured wounds, to slightly excoriated surfaces, and in fact to many cases where it has been desirable that the external air should be excluded, and the parts firmly sealed.

The method in which I have applied it has been as follows:—the edges of the wound having been approximated and dried, the solution was brushed over the cut surfaces with a hair pencil, and allowed to harden. A second or third coating was then given if thought necessary; or, if there was much disposition in the edges of the wound to separate, and more power required, a bit of rag or paper moistened with the solution was laid on. The whole very soon consolidates, and by its contraction draws the edges of the wound into the closest relation, making a firm protection, which entirely excludes the air, and generally remains attached until the parts are healed. The first effect of the application on the cut surfaces is a slight smarting or burning, but this very soon subsides, and so far as I have been able to judge, has had no bad effect on the healing of the wound.

In the operation for hare-lip, or other operations implicating the mouth and cheeks, I should be disposed to employ sutures—either a single one to secure an accurate adjustment of the prolabium, or, if the wound was of any extent, two or three to support it at the base—applying the solution instead of other dressings. When suppuration around the sutures occurs, the plaster at those points is slightly detached, may be easily raised, and the thread withdrawn.

In the greater proportion of wounds in which I have seen it used, the inflammation about the edges has been less, and the union more rapid, than in ordinary cases; which may be attributed both to the very intimate contact of the edges of the cut surfaces, and to the entire exclusion of the air.

I am, very respectfully,
Your obedient servant,
J. Mason Warren.

Dedham, May 11, 1848.

Messrs. Maynard & Noyes:

Gentlemen,—Your note requesting my opinion of the Liquid Adhesive Plaster, or Ethereal Solution of Prepared Cotton, as a surgical dressing, was duly received, and I regret that my leisure would not admit of an earlier reply. Having for more than a year used the Liquid Adhesive

Plaster, and having applied it and seen it applied in more than two hundred cases of wounds and surgical operations, since its *first applications to Surgery* by my friend, Mr. J. P. Maynard,—I have been able pretty fully to test its value as a surgical dressing. I have no reluctance, therefore, in saying that it affords me pleasure to acknowledge my decided preference *to this*, above all other adhesive plasters now in use. The neatness and elegance of the preparation,—the facility of its application,—its imperviousness to moisture, to blood or water,—its contractility,—and above all, its remarkable adhesive properties, all serve to render it a most valuable contribution to Surgery. By its use, the necessity for all kinds of sutures, pins and needles, will be almost entirely done away, the lips of the widest wounds being as closely and as firmly closed by it, when skilfully applied, as the edges of the slightest cut. Were it necessary, I might enumerate an almost endless variety of cases, in which the Liquid Adhesive Plaster has already been applied in practice; equally adapted as a covering to the simple puncture of the tenotome, or as a dressing to the more lengthy and formidable incision of the drawing-knife.

In six or seven operations upon the face and neck, performed for the removal of nævi and tumors, and where it is so desirable to avoid the deformity of an unsightly scar, there has been left scarcely a perceptible cicatrix, so perfectly have the edges of the wounds been apposed to each other and retained by this simple Solution. In two or three cases of plastic operations upon the face, I have used this Liquid Adhesive Plaster in the place of pins and sutures, with the most gratifying results.

In a case early reported by my esteemed friend, Dr. Mason, of Lowell, in which, as a consequence of a burn, all the integuments of the face, lips, cheeks, nose and eyelids had been either destroyed or distorted into the most hideous shapes, after making such incisions as were necessary for the removal of some parts, and the substitution of others in their place, and the restoration of still others to their original positions, every thing was fixed in its place of destination and there retained by the solution in question, without the aid of a needle or a pin, until a perfect union had taken place. In one or two similar

operations which I had performed *previous* to the discovery of this new adhesive solution, the success of the operation was in a measure defeated by a want of some more certain and effectual method of fixing and retaining parts in position during cicatrization than is afforded us by pins and sutures, or any of the adhesive plasters in ordinary use.

Another purpose to which the Cotton Solution has been applied, is in the treatment of enlarged testicles by compression, as recommended by Prof. Ricord of Paris, as also after the operation for hydrocele. It has been used in six cases of enlarged testicles which have come under my notice, of which four were the result of simple acute inflammation, the two remaining, blennorhargic. In all, it fulfilled in a most admirable manner the purpose for which it was applied. The stimulus of its first application offers no objection to its use, particularly if the disease has assumed a chronic form.

Spread over bruised and excoriated surfaces, it formed a sure protection against accidents from friction or the external air, and as a dressing for scalds and burns, I think it will not be found surpassed by any thing now in use. Experiments of this kind have already been made with it, in several instances. It may not be improper to mention one or two cases in illustration. A child of four years had been severely scalded, by the upsetting of a kettle of boiling water. The burn extended over the whole of the lower extremities, and a third, nearly, of the surface of the body. The ordinary application of sweet oil and cotton was made to it, and allowed to remain for three or four hours. During all this while, the child continued to writhe and shriek, in the most terrible agony. At the end of this time, the dressings were removed and a covering of the Ethereal Solution of Prepared Cotton was substituted for it. The application seemed to afford almost immediate relief. It may have been, perhaps, in part owing to the anæsthetic properties of the Ether; but certain it is, that the child soon fell into a quiet slumber, and never after suffered but little, apparently, from the effect of the burn. The Solution was re-applied several times during the progress of the cure, and, as it were, desquamated only as the surface beneath was healed.

In another instance, a young man of 20 had been severely burned by the accidental explosion of a camphene lamp. The burn was one of great severity, and extended over the whole of the face, neck, arms, and front of the chest. A coating of the Ethereal Solution of Prepared Cotton was immediately applied over the entire surface, forming throughout a most complete protection against the influence of the external air, and, with the exception of the momentary pain and smarting occasioned by the pungent nature of the ether, was spoken of by the patient as affording the most gratifying relief. Fresh applications of it were afterward made, as occasion required. The cicatrization was rapid, attended with but little suffering, and without any of the accidental deformities so common to burns of even much less severity—this artificial covering forming, as in the instance above, a most effectual safeguard against the adhesion of parts which are contiguous, such as the fingers and toes during the healing process. The accumulation of serum or lymph which form beneath it, are to be discharged by puncturing it, as you would the natural skin. The only objection to its use, is the smarting attendant upon its first application, and I am not sure that this is not more than compensated by the cooling and refrigerant effect which follows the evaporation of the ether.

My time or limits will not allow me to speak of the many other equally important uses which have been made of the Liquid Adhesive Plaster. I shall only mention the fact, that we have repeatedly made use of it as a dressing after amputation; in forming the immovable apparatus in cases of fracture and dislocations; in the treatment of varicose veins, of indolent and irritable ulcers, of erysipelas, and as a shield of protection against the dangers of post mortem examinations and dissections, and many other cases of minor consideration.

I must not forget to mention, however, a very novel but ingenious method of dressing wounds of the scalp, which I have practised, but which was originally adopted by my friend, Mr. Maynard, to avoid, if possible, the dangers of erysipelatous inflammations so common to this part. It is as follows:—The hair having been carefully shaved from the scalp, a narrow strip of sheepskin or wash-leather,

or even cloth, is made adherent to it upon each side and along the whole extent of the wound. The strips are to be removed a little way, say half an inch from the edges of the wound, and there firmly and carefully fixed, by means of the Adhesive Solution. The whole is now to be kept together by sutures passed through the leather, from side to side, and drawn with sufficient firmness to approximate closely the two edges of the wound, and secured by knots or by sewing the edges of the two straps together, as you would sew up a rent in a garment or bit of cloth. To give it still greater security, the whole may be covered with a coating of the Solution, or a piece of gold beaters' skin fastened with the same. The same kind of dressing may also be equally applied to any other part of the body.

Of the manner of applying this Liquid Adhesive Plaster, I need not speak. It has already been sufficiently described by others. This much, however, may be said. Some little knowledge of its properties, some little practice in using it, some little slight of hand and skill in manipulating it, are all essential to a proper and successful application of it. I have said more, perhaps, in relation to the use and value of this new adhesive material, than is required as a simple reply to your note. It will be pardoned in me, however, when it is remembered, that its first and original application to Surgery was made by my friend and pupil, Mr. Maynard, and that the first and only cases in which its properties had ever been fairly tested, until very recently, were those occurring in my own practice.

Having had, therefore, a longer and larger experience in the use of this article, than perhaps any other surgeon, I could not say less than I have said, when called upon to express an opinion in relation to this truly valuable contribution to surgery and to art.

I remain yours, very respectfully,

S. S. WHITNEY.

U.S. Department of Health, Education, and Welfare, Public Health Service
Washington, D.C.
NATIONAL LIBRARY OF MEDICINE