On the relation of psychology to physiology : a review.

Professor Bennett, M.D.
&c. &c. &c.
With the Author's Kind regards.

ON THE RELATION

OF

PSYCHOLOGY TO PHYSIOLOGY:

A Review.

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The World of Mind: an Elementary Book. By ISAAC TAYLOR. Jackson and Walford, London, 1857.

The Human Mind, in its Relations with the Brain and Nervous System. By DANIEL NOBLE, M.D., &c. John Churchill, London, 1858.

WHAT is the relation of psychology to physiology? and what the place which mind ought to hold in a system of physiology? To which questions may be added this other—What is the proper method of exposition in unfolding those departments of animal physiology in which the mind and the body stand mutually related?

In these days when physiology, the most fundamental of the medical sciences, but at the same time the youngest, is attracting so much attention, is being so diligently cultivated, and is exerting so wide an influence over the whole range of medical science and medical practice, it is of paramount importance that her foundations be well and securely laid. And in these days of rapid change in science—of change with progress, but of change, also, with at least occasional retrogression—it is equally important, from time to time, to consider well whether they be so or not. During the last thirty or forty years—nay, the last fifteen or twenty years—physiology has undergone a marvellous revolution, extending alike to its principles and its details, and consisting quite as much in the rejection of old, as in the acquisition of new materials—in the disfranchisement of its Old Sarums, as in the enfranchisement of its Manchesters. Within that time physiology may be said to have been taken to pieces, and reconstructed anew—its foundations re-examined, and to a great extent relaid—

made wider as well as surer—and to rest now, as formerly it did not, on a basis broad enough, and strong enough, to bear and to hold the whole living organized creation—living vegetables equally with living animals—the *proto-coccus nivalis* and the *monas crepusculum*, as well as the oak and the lion—the lowly beings, animal and vegetable, "of whom as many as there were men in the army of Xerxes might be marshalled in open order upon a sixpence," equally with beings of the order of which that army was composed. No physiologist now-a-days would think of explaining *all* the phenomena of *vitality* by a reference to such first principles as sufficed with the late Dr. Bostock, or even with the late Mr. Herbert Mayo, whose regards were mostly centred on the facts of human physiology, or, as illustrative of these, on analogous facts in the history of the more perfect of the lower animal orders.

But, vast as is the progress which physiology has made since the times of Bostock and Mayo, it is conceivable that, in the changes it has undergone, it may in some respects have suffered loss; and peradventure that, in sweeping away the rubbish of the old physiology, our modern physiologists may have swept away with it something that was *not* rubbish, but good and true, and very precious.

Our own belief is, that, in respect of that department of physiology to which the questions placed at the beginning of this article apply, this has happened. Our firm conviction is, that while, five and twenty years ago, it stood on an intelligible and sound footing, it does so no longer; and that it now rests, besides, on a footing which is continually shifting, being sometimes based on one ground, sometimes on another. In short, it seems to us that, in this whole department of our science, our modern physiologists have lost their footing—have gone astray, and got enveloped in a fog. They take up mind, and drop it, as suits their fancy or their convenience. They seem to think it is something they have no real concern with—something "foreign to the proper business of their science," which they are half afraid of, as if it might burn their fingers; or, at least, regard as a jargon of metaphysics, which will not incorporate with neurology. And yet they feel that they cannot altogether cast it aside—that they must take account of it, and deal with it. Discarding the old heading, "*The Animal Functions*," under which their predecessors (*e. g.*, the venerable Alison) gave us "the history and explanation" of the living being *Man*, as he is revealed to his own consciousness, and as he stands out to the view of his fellow-man; and as the two walk arm-in-arm, or sit at table together, and socially talk or sympathetically laugh and weep together*—discarding, we say,

* "The provisions of nature, in the constitution of each individual of the human species, are not confined to his own immediate wants. They extend to his adaptation for social intercourse; to the relief of his sufferings by the

this fine old heading, and the treatment of their subject which it includes, and substituting for it the heading, "*The Functions of the Nervous System*,"* they give us what we may best convey our idea of by saying, that it is something intermediate between the play of Hamlet, with Hamlet *all but* left out, and the play of Hamlet *mostly* read backwards. For neither is the play wholly read backwards, nor is Hamlet altogether left out. In one, or in a series of sections or chapters, we have the functions of the brain, and of the cord, and of the nerves, made the subject of consideration, in which mind is not so much as named in the heading, and is in the treatment kept well in the background; while in another we have *sensation*, the *senses*, and the organs of the senses—mind here unaccountably cropping up and standing first. Further still, in a separate division, we have "The Voice and Speech" fully treated of, even in those of their treatises which include general physiology, and embrace the dumb animals; while in the chapter on "Motion," or "Muscular Contractility," an apology is made for our being put off with a meagre account of those functions of locomotion which, in their kind and degree, are common to all animals, and with the entire omission of all notice of the functions of the skeleton in relation thereto—functions these (active and passive), which, linked directly with the *objects* of animal life ("in which mental acts are essentially concerned"), may be said peculiarly to constitute *the life*—or what Gilbert White calls "*the life and conversation*"—of animals, and specially to determine as well the conditions of animal existence, as the modifications of animal form; while the exercise of them, involving, above that of all others, a continual wear and tear of substance, necessitates, above the requirements of all others, continual supplies of food, together with all else in the *organic* life of animals that this necessity implies. Alas! how is the gold become dim! how is the most fine gold changed! since the days, not yet thirty years ago, when Alison (psychologist and physiologist both, and of no mean order) gave us an exposition of this department of our science, which, alike in its groundwork and its details, to this day contrasts favourably, we think, with that of those (and these not a few) in this country and on the continent, who have come after him, and have superseded him as a guide and an authority in what he was fond to call the "noble" science of physiology.

As to the causes which have led to this change—to this muti-

sympathy, and the increase of his enjoyments by the participation, of others; and to the cordial union and co-operation of numbers in prosecuting objects and surmounting difficulties, for which the exertions of individuals would be inadequate."—Alison, *Outlines of Physiology*, 3rd edition, p. 393.

* "What a difference of system this points at!" Cullen, in preface to "*First Lines*," in allusion to the addition of a very few words made by Boerhaave, at the end of forty years, to one of his aphorisms. So too—"Putant homines rationem suam verbis imperare, sed fit etiam ut verba vim suam super intellectum retorqueant."

lation of mind by our physiologists, and to its almost complete expurgation by them from their science, they are very various. We will not mention, although we believe it to be the case, that psychology has never acquired its due and rightful ascendancy among our English physiologists, who have of late taken the lead in giving tone and character to physiology. But we will say—and let us say it at once and boldly—that one cause lies in the *undue* prominency which has of late years been given to what is called "the reflex function" of the spinal cord, which, crammed down the throats of our physiologists in the first instance, whether they would or not, gained at length the firm footing in physiology it has *temporarily* got, through the untiring perseverance of the late Dr. Marshall Hall, and which function of "reflex" agency, we (who have strong convictions the other way) regret to say has, under the fostering care of Dr. Laycock and Dr. Carpenter, been extended to the brain. So great is the ascendancy which "unconscious (and purely organic) reflex agency" has acquired in physiology, that we not only breathe by it, and eat and defecate by it, but walk by it, and talk by it. "Automatic agency"—*i. e.*, an agency of or belonging to an automaton, a machine—has supplanted "habit," viewed as mind become expert in act through use of its own inherent power; and to "unconscious cerebration," it is now suggested, we owe even the highest achievements of human genius. We will not charge these physiologists with materialism. They disavow it themselves, and we do not think them really chargeable with it, at least in its ordinary and vulgar sense. But we will say, that the kind and extent of power they assign to living nervous matter, in relation to mind, are such and so great as, in our judgment, to degrade the mind to the level of a spiritual puppet—or, in effect, to put the sovereign prerogatives of mind into commission, or under trust.

We are glad to see that, in his work before us, Dr. Noble, although to no small extent imbued with the spirit of this school of physiologists, discountenances this doctrine of unconscious cerebration:—

"I conceive that the particular facts which seem to countenance the theory of unconscious cerebration, will certainly admit of some more obvious and simple interpretation, than one which renders it necessary to regard nerve-substance as elaborating and perfecting thought *without thought*—a process, it appears to myself, which would be not altogether unlike the production of melody by a notoriously unmusical instrument, without the sensible manifestation of sounds."*

And he pays this compliment to Dr. Laycock's arguments in support of his doctrine of "the reflex function of the brain," that "it is not very obvious how the evidence of facts can be made to

* Pp. 94, 95.

corroborate them, or otherwise;"* while, with respect to Dr. Marshall Hall's theory—premising that we have never yet seen any attempt made fairly to meet the objections which Dr. Alison, following Whytt (particularly in his "Remarks on the Sympathy of the Nerves"),† long ago urged against it, both in his "Outlines of Physiology,"‡ and in the pages of the *British and Foreign Medical Review*§—we rejoice to see indications of renewed opposition to it. At the last meeting of the British Association, Professor Owen read a paper from the pen of Mr. G. H. Lewes (a gentleman who is earning for himself as high a reputation in physiology, as he has already acquired in general literature, and as a novelist), on "The Spinal Cord, a Sensational and Volitional Centre;" and in the *North American Medico-Chirurgical Review* for May last, we have a paper by Dr. George Paton of Galt, on "The Perceptive Power of the Spinal Cord"‖—in both which papers we have *facts*, bearing out the inferences implied in their respective titles, and which we would commend to the serious attention of the devoted adherents of the late Dr. Marshall Hall.

And to bring to a conclusion this branch of our subject, we will merely express our gratification at the *havoc* which Dr. Brown-Sequard is just now making of long-established notions in neurology, and particularly at his calling in question—what seems to be held no less than a first principle in the science—the distinction between the grey or vesicular nervous matter, "as the seat of *primary change;*" and the white or fibrous, "as a mere *conductor*, or channel of transmission," of the influence originating in the grey. "There is nothing," says Mr. Lewes, "like the sharp angle of a paradox to prick the reader's attention;"¶ and it may,

* P. 109. † Edinburgh, 1764.

‡ Third edition, pp. 211, 212, taken in connection with p. 385, *et seq.* See also his paper on "The Physiological Principle of Sympathy," in Edin. Med. Chir. Trans., vol. ii., p. 174, *et seq.*

§ Vol. iii., p. 29, *et seq.*

‖ Were it not that the author's meaning sufficiently appears from his paper, this title would be as exceptionable as the expression, "unconscious cerebration." But, with Dr. Paton, it is not really the cord in the spinal column, it is the mind, that is conscious of and perceives what is perceived, and is consciously felt in consequence of the impressions made upon the cord. This organized and living structure furnishes the conditions under which sensations are felt, and it forms the medium through which different mental acts affect various muscles; nay, nor these only, but likewise all the vital organs and their functions. This has long been acknowledged on all hands; and this being the case, we cannot (with all due respect for the ingenuity and perseverance of Dr. M. Hall) perceive that any great effort of genius was required to show, that (as in his experiments) all functions of our bodies in which mental acts are, in the natural state, essentially concerned, must be liable to excitement, and so far (to use an expression of Dr. Alison's) to be *imitated*, by *injuries* of different portions of that part of the nervous system which—so essentially requisite in order to these acts, and to their agency on the body, and so carefully constructed with that view—is (it is worth while observing) so effectually protected naturally from injury.

¶ Sea-Side Studies, p. 389.

perhaps, aid us in the object we have in view in this article—which is, to assert for mind its own proper rank, as a power in nature of the first magnitude, as well as its proper place in physiology—if, with Mr. Lewes, we go a step further, and confidently affirm, on the ground of *fact*, "that both contractility and sensibility (sensation, perception, will, mind) are manifested by animals *totally destitute* of either muscles or nerves;"* nay, if we affirm that, in man himself, there is a stage in his history when his mind, latent it may be, exists in his body independently of nervous matter, because prior to the formation or evolution of this matter from the *homogeneous* germinal membrane, of which alone, at this stage, his body consists.

Revolutionary these remarks may seem, and their spirit wanton. But believing the doctrines assailed to be no true doctrines, or, some of them, at least, to be of that order which can neither be proved nor disproved, and the whole basis of this department of animal physiology, as sometimes treated, to be unsound, we deem it right in the interest of physiology to say what we think without reserve. Our desire is simply to show cause why the existing system of physiology, as it relates to the purely "animal functions," should be reconsidered—to move for a new trial, and to pray the court—shall we say of "*Common Pleas?*"—that mind may again be put in possession of its lawful rights in relation to the nervous system, as lord paramount therein, and the nervous system denuded of powers and offices which do not of right belong to it, otherwise than as the seat and instrument of the mind. And we trust our learned brother, Dr. Carpenter, will not consider that, in anything we have said hitherto, we have exceeded the license freely accorded to counsel.

What, then, to revert now to the questions we set out with—what is the relation of psychology to physiology, and what the place which mind ought to hold in a system of animal physiology? The answer to these questions will lie in the answer to be given to another question, namely, What is the proper object or subject-matter of animal physiology; or, what is it that it properly includes?

In as far as physiology is concerned with the powers or capacities and the actions of the *living* animal *body*, it is to *vitality*

* "Some physiologists, indeed, misled by the *a priori* tendency to *construct* the organism, in lieu of *observing* it, speak of the muscles and nerves of the simplest animals; because, when they see the phenomena of contractility and sensibility, they are unable to dispossess themselves of the idea, that these *must* be due to muscles and nerves. Thus, when the fresh-water polype is seen capturing, struggling with, and finally swallowing a worm, yet *refusing* to swallow a bit of thread, we cannot deny that it manifests both sensibility and contractility [both instinct and instinctive motion], unless we deny these properties to all other animals. Nevertheless, the highest powers of the best microscope fail to detect the slightest trace of either muscle or nerve in the polype."—*Ibid. in loco.*

only and its laws that it traces phenomena; and so far psychology forms no part of it. But, as ordinarily understood, physiology takes account of *final* as well as of physical causes—of the *objects*, *ends*, or *purposes* of vital action, as well as of the conditions under which vital action occurs.* The word *function*, continually on our lips, clearly indicates how largely the notion of final causes is mixed up with that of physical causes in this science; while, in point of fact, we are at every point having an eye to the *uses* which every part of the body serves—to the *design* or *intention* of every vital action. But what, in the case of the *animal* body, is the main and highest use of this body, taken as a whole? Can any one doubt that it is to serve as the seat or residence, and the instrument of the incorporeal mind, which *animates* it during life? Take away, in any of the higher animals, the parts primarily subservient thereto—the whole brain and nervous system, the whole of the voluntary muscles and the bones—and how much of the body will remain? Very little indeed!—and this little just those parts whose only use was to maintain those others in a fit state in relation to the mind. But, independently of this consideration, which were warrant enough for including the mind —albeit it is not of the body—in any account we give of the latter, it is important to observe that not only is a large part—the far larger part—directly subservient to the mind, but the mind itself is essentially concerned in the functions—the whole actions, active and passive, of this part. The physiology of the eye is, by the common consent and agreeably to the ordinary language of physiologists, the physiology of *vision* as well as the physiology of the *organ* of vision,—the physiology of the ear, the physiology of *hearing* as well as the physiology of the *organ* of hearing. "It is not (as Mr. Taylor remarks) the nerve behind the tympanum—it is the mind that is conscious of sound; it is not the retina, but the mind that is conscious of light."—(P. 310.) The physiology of standing and of walking, of speaking, and laughing, and weeping, and blushing, is the physiology of will and of habit—of sensation, thought, and emotion, quite as much as the physiology of bones and muscles, of nerves, and glands, and bloodvessels. So true is it that, although mind and matter are two natures, not one—that, distinct as is the mind from the body which it inhabits, and as is our notion of mind from our notion of *vitality*, which is an attribute of the body—of organized matter, vegetable and animal—nevertheless, in the body (the animal body) mental acts are so intimately "*interwoven*" with certain corporeal acts as to constitute an *essential* condition to the performance of these—as essential a condition as atmospheric air to respiration,

* Those who do not use or exactly approve of this language, must at least distinctly perceive and allow that the study of final causes, or teleology, ought to advance *pari passu* with that of every part of physiology—from which in fact it is most uniformly and continuously supplied.

or light and heat to the decomposition of carbonic acid by living vegetables—nay, so interwoven with them as to constitute an essential *part*, so to speak, of the corporeal acts themselves. A physiology, therefore, of the animal body which should shut out the mind would be as incomplete and as useless as a *bateau à vapeur, moins la vapeur*. The psychologist, it may just be observed here, may, in treating of his proper subject, do, as respects the body, what the physiologist, in treating of his, cannot do as respects the mind—he may ignore it. "Mind (says Mr. Taylor) has no consciousness of nerves or of muscles:—volition is a purely rudimental fact, having respect to nothing but the mental intention which is realized at the instant it takes place; how realized, the mind neither knows nor cares; but the physiologist may discover it if he can. . . . . On the one side there is thought, or *mind in act;* on the other side there is *motion*, taking place in a mass, larger or smaller, heavier or lighter. The intervening apparatus we are unconscious of—we are quite mindless in regard to it: *it is to the mind as if it were not.*"—(Pp. 137, 138.) Herein lies the advantage the psychologist has over the physiologist. He needs not to know anything of nerves and muscles, or of the contractile irritability of these, or of "the pull upon the bony leverage." They are to him, and as respects the completeness of his task, as if they were not. It is far otherwise with the physiologist.

If, indeed, the physiologist desire or hope to give any true history or any useful account either of the living animal orders around us, or of the living being *Man*, he must incorporate mind and body—and this, not merely because otherwise his physiology of the body will be unintelligible, but because the history he undertakes to deliver will be incomplete. For, when he professes to give us, as, along with "the physiological anatomy," Messrs. Todd and Bowman do, "the physiology of man," he promises a good deal more than the physiology of man's living body. "Human physiology," too, includes a good deal more than the physiology of the human body. The physiology of man is not the physiology of his body only; it is the physiology of his mind and of his body as coexistent. Nay, it is in very truth, the physiology of his mind as existing in his body, and as acted on and acting *by* and *through* the nervous system therein, together with whatever else in the body is either specially subservient to the mind, or is requisite for the sustentation of the entire body as the handmaid of the mind. Man's mind and man's body, it is true, are in themselves two distinct *natures*, not one; but they make up together not two, but one distinct *being*. What, therefore, God hath joined together, let not the physiologist put asunder. Apart from the mind, the living body has no existence, nor any history. And when it has served its purpose, it is resolved into air, earth, and water, without loss or change in

either the quantity or the quality of these materials; while the mind (disembodied), eluding as well the gaze of the physiologist as the grasp of the anatomist and the chemist, and having in the last moments of its embodied state "affirmed and built itself upon a boundless futurity," goes to 'its own place.'

Taking this view of the relation of psychology to physiology, and of the place which mind ought to hold in a system of animal physiology, there is nothing we should desire more (having regard to the school to which we belong) than to see such a man as Dr. Noble—for whose abilities and candour the perusal of his work has inspired us with feelings of sincere respect—betake himself for a time, with Mr. Taylor for his guide (no vile Scotch metaphysician he), to the higher regions of pure mind, and thence, and in the full blaze of the light around him, look down on the world of nerve and nerve-force beneath; and, having done so, to give us another work on "Mind in its Relations with the Brain." We cannot but think that in many respects it would differ from the present; that his own exposition of mind would be more complete than that presented in his second chapter—more compact, at least, and more salient; that some questions on which he speculates with some degree of confidence he would refer to as lying beyond the limits of legitimate speculation; and that seeing in mind a *unity* he had no clear perception of before, as well as a *power* far surpassing anything he had ever dreamt of, he would shrink from the attempt either to assign the seat of consciousness, or to indicate the sites of either the emotional sensibility or the intelligence. For what if consciousness, which, from the statement of Mr. Lewes, appears to be a more general fact in animal physiology than the existence of a nervous system—what if, in as far as it is connected therewith, it be coextensive with the whole nervous system? What if the mind—"couched in its den behind its two windows"—sees "*at*" or "*in*" the retina, as well as "*by*" the retina? The impression which a careful study of "*The World of Mind*" has left on our own mind is, that there is that in the *human* mind which has no coefficient or correlative in the nerve-force of the brain; that, linked as the mind is with the brain, it yet possesses an *unconditioned freedom* which, as it owes *every thing* to it, it holds in *its own keeping;** and, further, that what in the nature of things it is possible for us ever to ascertain as to the purposes which the brain serves in relation to the mind, we must gather *mainly* from the study of those of the lower animals (their habits and organization) whose brains contain *every*

* "Among those convictions which no sophistry can weaken longer than for an hour, this, of the *absoluteness* of that power of which our volitions are the result, is one of the most firm. The most subtle processes of logic still leave us in possession of the intuitive belief, that MIND is free, *in some sense*, in which nothing else in the world is free; and that whatever be the law of its action, it is a law differing essentially from physical law."—Taylor, p. 50.

thing that is to be found in ours: and for this reason, that (while, as Taylor observes, there is little if anything in human nature of which we can be warranted in denying absolutely the *elementary* existence in the animal nature—indeed, as he elsewhere admits, *nothing*) in them mind is *fixed*—thought, a *stereotyped* mechanic process—will, bound fast in fate. Their minds move on a single line, in a rut, which if they ever overpass, it is but a short way and for a brief space.* According to Archbishop Whately, speech is a *special* gift of God to man, and a standing evidence of divine interposition in man's behalf;† and in as far as it is so, and as thereby, and by means also of his free-agency—which lies altogether outside his brain— man's mind is raised above the brute mind, in so far will the physiologist be misled if he look for an *explanation* of the human mind, in the human brain.

Taking leave of Dr. Noble's work with this brief and passing notice, commending it heartily to our readers as the production of an able, and (what we estimate as highly) of an honest and independent mind,—and trusting he will pardon our commending to his own thoughtful perusal the work we have associated with his in this article—(and we would take the liberty of adding, if unknown to him, Dr. Alison's Outlines of Physiology‡)—we shall devote our remaining space to a few remarks on Mr. Taylor's "World of Mind."

Dividing his subject into three parts—metaphysics, psychology, and logic, Mr. Taylor treats only of the first and second, reserving the logic for another volume. We will only observe with reference to the first of these—the metaphysics—that we rejoice to see such a man—and an Englishman—planting both his feet firmly, and boldly taking his stand on the same ground, as on a rock, with that occupied by Reid, and Stewart, and Brown,—the ground of common sense,—and bearing his frank and hearty testimony to the soundness of the position which these Scotch metaphysicians made their starting-point,—namely, that "the only *foundation of much of our belief*, and the only *source of much of our knowledge* is to be found in *the constitution of our own minds*."§ Not treating his subject historically, while yet he begs

* "The constructive orders around us, in setting about their day's work, go straight forward toward their end, losing no time, wasting no strength, in blunders, or in earning experience at a dear rate; they meet no vexations in attempting what they find at last to be impracticable. But then when the immediate end of animal labour is attained, when the task is completed 'according to order,' nothing more, nothing in the way of experiment, in the hope of improvement, is ever attempted. The boundary line which encircles the mechanic and constructive ingenuity of the animal orders has no parallax; it is fixed as fate."—Taylor, p. 181.

† Introductory Lessons on the History of Religious Worship, Lesson I.

‡ Particularly chapters ii., viii. (§ 11), ix., xiii., xiv., xv., xvi.

§ The following sentence from the Philosophical and Literary Essays of Dr.

to be understood and supposed that he has thus acquainted himself with it (p. 11), he does not so much as name those illustrious men, nor indeed does he refer to or name any, besides, in the course of his volume. But in section vii., in which he sets forth the "grounds of certainty in relation to metaphysical speculation," he strikes the same chord, he speaks the same language which they do :—

"As to any of those instinctive convictions or assumptions which are the basis of our intellectual structure, and from which all reasoning must take its start, it would be a mere solecism to ask for *logical proof* of their certainty. No meaning can attach to the words in which such a demand might be conveyed. Propositions that are indeed susceptible of logical treatment, for the purpose of establishing them as certain, will always contain two or more ideas, the connection between which may be shown to be such as is therein affirmed, or the contrary. But an intuition, or an instinctive conviction has no constituents—it has no parts—there is nothing in it that is complex, or that implies any sort of interior relationship. We *believe* those things which may be shown to be certain or to be probable, by exhibiting their inferential connection with some other thing that has been assumed as indisputable, and which is anterior to the matter in question. But these intuitions, by the very terms in which they are conveyed, can have nothing anterior to themselves; nor can they ever come before us in the form of inferences that are logically valid. Why do you believe your own existence? There can be no room for a "why," in this case: the *cogito*—ERGO *sum*—is a mere quibble; it is an unmeaning play upon words."—(Pp. 70, 71.) "As soon as I come to attach any distinguishable meaning to the *cogito*, I have laid hold of whatever may be contained in the *sum;* and *vice versâ*. The *ergo*, therefore, can express no inferential dependence of the one term upon the other."—(P. 73.*) "He who persists in the endeavour to push forward after the

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Gregory, published as long ago as 1792, is worth while quoting as being, to our mind, a correct exposition of the principle of common sense in its application to physiology, and as indicating the amount of tedious and unnecessary labour which might have been spared to the students of this science if that principle had been strictly adopted :—"We can only hope to acquire real and useful knowledge of our science by attending to the frequent co-operation of *different kinds of causes*, with a *fixed distrust* of all philosophical notions and doctrines that have been inculcated on the subject,—but with *due regard* to the *natural suggestions* of the human faculties, and a *sacred reverence* for those *fundamental laws* of *human thought*, according to which even our observations must be made, as well as our inferences drawn, and our ultimate opinions formed."—(Introduction, p. xxiv.)

* Query?—Is it not better to show that these are *identical propositions*, the only difference being *in the words*, just as in mathematical reasoning, always referable ultimately to identical propositions :—as the French say, *Le même est le même: Voila toute la mathematique.*

We cannot forbear taking occasion here to submit even for Mr. Taylor's consideration, but more particularly for that of those of our own profession who write "Elementary books" on physiology, and have to treat in connection with it of mental science, and who desire, as they needs must, to convey clear and precise notions of its fundamental truths,—the following extract from a letter, with which we were favoured some time ago, from one to whom the two worlds of life and mind have long been the "home of thought," and who has done good service in both :—"It seems to me that good might be done, in the present state of this (the psychological) department of physiology, by impressing as forcibly as possible on those who will study the subject, this principle, that truth in all

abstractive process has reached its end, can do nothing but exhibit himself whirling in an eddy, where he loses his hold of common sense."—(P. 74.)

Turning now to the strictly psychological division—which fills the greater part of the volume—we find that Mr. Taylor makes it his first business to consider the "breadth" of the world of mind. This world proves after due inquiry, to be coextensive, or nearly so, with the animal creation, and to be, at least very nearly, as to all the lower animal orders, "a land of pure delight" and of unceasing activity, in which there are no idlers nor any grumblers,—"a vast place of work, where labour is not toil, where there are no task-masters,"—where each and all are fulfilling the end of their being and finding their happiness in it. This whole chapter is a noble epic poem; and if said or sung by Jenny Lind or Mr. Dickens, would make every fibre thrill through every limb. Here is a verse or two of it—we wish we had room for more:—

"We may now fancy ourselves in the heart of that wilderness of life through which the Amazon rolls its volumes. Life, upon this broad surface, developes itself in all its power: the humid heat, the rampant growth of gigantic plants and trees, the crowding of all species—feeding upon never-exhausted stores, and in their turn devoured—all things favour the replenishment of this region with animation to the utmost extent that may be possible. What is aimed at, in this commonwealth, and what is accomplished, is indeed 'the greatest good of the greatest number.' But as to these millions, many as they may be, each individual of them is required, from sunrise to sunset, or perhaps from sunset to sunrise, to look to himself, and to acquit himself well as the guardian of his particular life and happiness. Who then shall calculate the prodigious amount of labour that is summed up in this round of daily work? In this region there is often great noise; there is chattering, and chirping, and screaming, and wrangling: but as to the work that is done, it goes on silently; and not only silently, but without inflicting any suffering upon the work-people: the twang of the driver's lash is not heard in all this populous district. Works, admirably finished, are turned out here; but no brows are bedewed with sweat, no tears are shed upon unrequited toil; the bread that is eaten is not the bread of sorrows. The labour could not have been more easily performed, even had spirits from an upper world come down to do it. . . . A tropical wilderness, however, is not merely a great work-shop, but it is a theatre of gorgeous decoration; and

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such inquiries, and in this period of science, is to be acquired and extended chiefly by giving *precision* to the *terms* used; and that when we do this, we shall find that we *simplify* them and *diminish* their *number*. Certainly we gain nothing, often lose, by attempting to make our meaning clearer by *adding* to the number of terms, always in these sciences injuriously *metaphorical*, used to express it. I think the most abstract notions in these studies are best expressed in as abstract a form as the definitions and axioms in mathematics and the exact sciences; and when that is done we shall find, I believe, that there is no disadvantage in having for those parts of the science, *only a single language*—if one that has been used by thoroughly informed men—any more than it would be a disadvantage to a mathematician not to be able to read Euclid in Greek. Certainly, it appears to me that no advantage, but decidedly the reverse, has resulted from the attempt to improve or extend our knowledge of the mental department of physiology by the study of Oken or other German metaphysicians—even of Morell—in preference to those of our own country."

here, although it is not so among ourselves, the work-people are all, and always, well dressed. Just now we have affirmed that animal labour is not a drudgery; and thus, and as it were to attest the fact, and as if nature would wish us so to interpret her dealings with her household—so it is, that these labourers are never to be seen otherwise than in holiday-trim. Throughout nature's *own* industrial districts, the work that must be done is effected by those who (as to many of them) are attired like princes; they are decked like the grandees of an Eastern presence-chamber."—(Pp. 121-23.)

Mr. Taylor then asks—"But to what end all this embellishment? . . . . For whom, or for whose eyes, does nature thus richly decorate her children? Is it because ornament—beauty of form and colour, are good in the eye of the Creator? Is it to attract the listless admiration of man?" We regret that we have not time to follow him through these and other kindred inquiries,—as, *e. g.*, for whose ears, the sweet melody of the woods? for whose nostrils, the incense and sweet perfumes of earth? We may just state, however, that he finds the only *sufficient* answer in this,—the *happiness* of the animal orders themselves, the pleasurable gratification of their own eyes, and ears, and nostrils,—not, certainly, exclusively or chiefly those of man. "Man has walked the earth only during these last few days of planetary time. Creations, each of them gay and fair as this, have had their times, and have passed away, almost an eternity gone by."—(Pp. 125, 126.)

Having taken this wide survey of the world of mind, and having found mind to be, in its general aspect, a uniform principle throughout, Mr. Taylor then takes it into his laboratory for analysis (chap. x. *Rudiments of Mind;* and chap. xv., *Relative value of certain Terms*). He throws the concrete mass into his crucible, to separate the incidental and accessory from the necessary and essential constituents of mind. It comes out, under his hands, one undivided and indivisible element, possessed of a susceptibility or a sensibility towards matter, in which it is *passive*, and of an energy towards matter, in which it is *active*. This energy, which is but another word for Power, is an *initiative* prerogative of mind. It is this power, with its inherent sensibility, that constitutes the mind. But this power is, in one word, the *Will*—"la *Volonté*." It can be nothing else. The mind in act is the will in act, exerting its initiative power; the mind acted upon is the will acted upon, in its susceptibility.* All else in

* "There are (as Dr. Robert Jamieson observes, in perfect accordance with Mr. Taylor's views)—there are no mental powers, but only a mental power; namely, the will. . . . Humanity is the manifestation of the will of man. . . . Individuality is the will; personality is the will: the will is the man." —("Mind and Body—a Discourse on the Physiology of the Phrenical Action of the Cerebrum:" 1858.) The same, or nearly the same doctrine, is taught by Brown and by Victor Cousin. According to the former, mind is "one faculty, simple and indivisible— . . . the permanent subject of certain varying phenomena of thought and feeling, of which we are conscious," and "which,

the mind are but *states* or *conditions* of the will—*modes* in which it acts or is acted upon. It is the conscious will that feels, and perceives, and remembers; that loves and fears. The so-called *faculties* of sensation, perception, memory, emotion, have no existence in nature; and the names given to them are but convenient and varied popular expressions whereby we indicate to ourselves and others certain states or modes of the conscious will. In short, the will is the mind: it is there that the *personality*—the "Ego" lies.

All else, we say, that is in the mind, or of it (as to its make), which does not betoken *power*, belongs to the *passive* susceptibilities or capacities of the mind. And as the will is the mind, so these capacities are capacities of the will. Such are sensation and perception, emotion and memory. These are not *powers* of the mind, but *capacities* of the one power—will. It is the will that is sentient, and percipient, and emotional; it is the will that is retentive of what has once passed through its consciousness. Yet over these capacities, albeit inherent in itself, the will has no direct control.

As to sensation and perception, all that is truly active in respect of them lies in the *attention* they receive from the mind, and which the mind may give or withhold at pleasure. True, they may be strong enough to force it to give heed to them; but apart from this, the mind is passive with respect to them. They spring up necessarily when the occasions which excite them arise. One cannot open his eyes but he must needs see what is before them, whether he will or no; and his perception of it must needs be such as it presents itself to his mind—relatively to some other object or quality—black or white, square or round, near or distant. Here, agreeably to the language of Victor Cousin, "nous ne sommes *que simple spectateurs.*" The truths which the mind apprehends, it does not make or create. The relations of things which it perceives obtain independently of it. "Nous ne sommes là que simple spectateurs. La raison conçoit une vérité mathématique: peut elle changer cette *conception*, comme ma volonté a changé toute-a-l'heure ma *resolution*? Essayez et vous n'y parviendrez point; et non seulement en mathématiques, mais dans toutes les autres sphères de la raison, le même phenomene a lieu. En morale, essayez de concevoir que la juste n'est point obligatoire; vous l'essayerez en vain; la raison vous imposera toujours la même aperception. *Vous ne pensez pas comme vous voulez.*"*

"Facts are chiels that winna ding,
And downa be disputed."

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though expressed by a variety of terms, of functions, or faculties, are still but the *one* mind itself, existing in different states."—("Lectures," *passim.*) And Cousin asks—"Qu'est ce que vous appartient? C'est la volonté et ses actes."—("Introduction à l'Histoire de la Philosophie.")

* Introduction à l'Histoire de la Philosophie.

Nevertheless, in man, the will is free in the matter of attention, and its indirect power over its sensations and its perceptions is incalculably great. It is the same with the emotional capacities of the mind. The will cannot by any direct effort excite an emotion as it lists. One cannot laugh or weep at will, because one cannot at will produce the emotions of which these are the natural expression. Nor are the emotions of the mind strung together by association, or excited by suggestion, as ideas are. They are inseparably linked to certain perceptions or ideas, and in such manner, that when these are present they follow; and it is in so far only as the will can control the former, that it can control the latter. "Thou shalt not covet thy neighbour's wife," is an injunction to be obeyed, simply by not allowing one's self to think of his neighbour's wife in such a way as shall provoke the emotion of desire.

As to memory and recollection, it may be observed as to their essence, that what has once passed through the consciousness of the will adheres to it, is retained by it, and may come up afterwards at any time to its consciousness, and be recognized by it. But the mind—the will—cannot summon it up at its pleasure. It wells up spontaneously from the "depths" of the consciousness. To call up a particular thought implies (as Mr. Stewart long ago observed) that it is already in the mind; *i. e.*, present to the consciousness. It is retained in the mind and reproduced in accordance with certains laws of association and suggestion—the reproductive suggesting element being some thought now present to the mind; or, as we think Mr. Taylor has very happily expressed it, it is "by help of something actually *in* view that we regain what is *out* of view"—it is "by the relationship of this to some element of the now-consciousness that we *regain* possession of it."—(P. 223.) And thus, as well as by the power which the will has to grasp and to detain it when it has regained it, and to make it a particular object of attention, its power over the train or succession of thought or of ideas indirect as it is, may be, and by cultivation especially comes often to be, very great.

But allowing that perception, and emotion, and memory are but capacities of the will, are not *abstraction*, and *imagination*, and *reasoning*, separate powers of mind, and of such a kind as to be rightly designated the "higher psychical powers?" Nay—they are simply the will in act, "at the impulse of some of its emotions or its tastes," "as related to some special occasion," which is different in each.—(P. 218.) Abstraction is but an *analytic* act or operation of the will, whereby it "sets off one from the others, by noting their differences, among the objects, qualities, or adjuncts attaching to a concrete which is before it."—(P. 219.) Imagination is but a *synthetic* act or operation of the will, whereby at the impulse or under the guidance of a particular class of emotions, or of tastes and sensibilities, it forms a concrete

out of the exhaustless stores of its materials; while reasoning, which has for its object the discovery or the exhibition of truth, is but the will in act, passing, as on stepping-stones, from one admitted fact to another, in order to reach a fact which it seeks to discover or to establish.

But we must pull up. It is scarcely fair to Mr. Taylor to follow him here unless we should follow him fully, which our limited space forbids, or unless we should follow him closely, which we are not now doing. Only, to give some significance and some degree of completeness to what we have now set forth as to the constitution of the mind, let us just observe with him, that "matter—the external world—taking a bearing upon mind, which in this respect is *passive*, and mind taking a bearing upon matter, in which respect mind is *active*," there arise out of this *interaction*, and because of it, the *conditions* of the life and growth of mind, its light and its heat, the air it breathes, and the food it feeds on. By this interaction the sparks are struck which fire the mind, and which develope—in the lower animal orders, in which mind, the will, is *fixed* (how fixed we neither know nor can comprehend)—this one power (will), with its capacities of action and affection, to the *full* measure and extent, always and in all species, which this fixation of its capacities allows—in man, in whose mind the will is *free*, this same one power, with its *boundless* capacities of action and affection, to an extent which *varies* immeasurably as to individuals, and may be either incalculably great or exceedingly small. "Throughout all species," says Mr. Taylor, "in the animal orders, mind invariably completes its intention; it makes full use of its powers, neither more nor less; and it does so with an undeviating regard to the law of its structure in each species, and it does so from age to age unchangeably. *But it is not so with man.*"—(P. 190.) With him, the development of mind, beyond a certain point, is "*contingent;*" and there is in fact in this respect all the difference "that constitutes the difference between the nations of Western Europe, and the aborigines of the Australian continent."—(P. 187.) And, alas! as he adds, "when we come to look into the vast mass of what might be adduced in illustration of the immeasurable prerogatives of civilization, with its arts, its science, and its philosophy, and when we trace these great products of mind to their source in the *constant* elements of human nature, we are confronted with the perplexing fact, brought to view as it is by the comparison above stated, that these elements—these inborn energies—give evidence of their existence only in what must be regarded as *exceptive* instances. Take the human family, all races, and in all times, and then the *million* to a *few* have lived and perished in the unknowing, the unthinking, the comfortless, and the precarious condition of a savage, or of a semi-barbarous condition—certainly destitute of science and philosophy."—(Pp. 187, 188.)

This fact, as Mr. Taylor remarks, "demands some attention." Much attention it receives from him; and, indeed, it may be said to form the starting-point from which he proceeds in a series of successive chapters (xiii. to xxv.), and in his own "terse and translucent style," to deliver the physiological history of this one power—mind and its capacities. We regret that want of space absolutely forbids our following him through this history, to which he manages somehow to impart an interest, although the subject seems scarcely to admit of it, noways inferior to that—yet of a much higher order—which attaches, in the hands of De Foe, of Mrs. Stowe, of Thackeray, Dickens, and others, to histories which they have given us, and which everybody reads. His book is one of the most fascinating we have ever read, and, for a scientific work, one of the clearest. Mr. Taylor is a poet and a painter, as well as a logician and a philosopher; and as original in the treatment of his subject, as he is free from waywardness or eccentricity. His whole picture of humanity you feel instinctively, as you look at it, to be true to nature. It is yourself—as you are, and as you are conscious you feel and think, or as you know you might do or be—drawn to the life.

One word more and we have done. His book has, we would fain believe, inspired us with a deeper reverence than we have ever had before for the majesty of that nature which God has given us, and which, made in His own image, after His likeness, is destined for immortality—as well as with a livelier sense of the vastness of that scheme which He has devised, and of the exuberance of those provisions which He has made, for the *happiness* of countless millions of *sentient* beings—who live in the present, and to whom the future has no existence—to whom this earth is "Eden," and "throughout which (as Mr. Taylor observes) *good* prevails, upon which *evil* makes no inroad, and upon which *organic pain* glances only for an instant."

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SILVER SUTURES IN SURGERY.

THE

ANNIVERSARY DISCOURSE,

BEFORE THE

NEW YORK ACADEMY OF MEDICINE.

DELIVERED IN THE NEW BUILDING OF THE HISTORICAL SOCIETY, ON THE 18TH NOVEMBER, 1857.

BY

J. MARION SIMS, M.D.,

SURGEON TO THE WOMAN'S HOSPITAL.

(PUBLISHED BY ORDER OF THE ACADEMY.)

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NEW YORK ACADEMY OF MEDICINE.

A SPECIAL MEETING of the Academy was held at the new building of the Historical Society, corner of Second Avenue and Eleventh Street, on the 18th of November, 1857—Dr. MOTT, President, in the chair.

The reading of the minutes of the previous meeting was dispensed with, when Dr. J. MARION SIMS delivered the Anniversary Oration, being a paper on SILVER SUTURES IN SURGERY.

At its conclusion, on motion of Dr. JOHN W. FRANCIS, seconded by Dr. BEADLE, the thanks of the Academy were presented to the Orator.

Dr. SMITH then offered the following resolution :

Resolved, That a committee of three be appointed to wait upon Dr. SIMS, and request a copy for publication.

Whereupon Drs. JOHN W. FRANCIS, JOSEPH M. SMITH, and JOHN WATSON were appointed said Committee.

C. F. HEYWOOD, M.D.,

Recording Secretary.

In consequence of the length of this Discourse, parts of it were omitted at the Anniversary Meeting. Most of the illustrations accompanying it are from original drawings, by Dr. Thomas Addis Emmet, the accomplished Assistant Surgeon to the Woman's Hospital.

J. M. S.

ANNIVERSARY DISCOURSE.

Mr. President, and Fellows of the Academy of Medicine.

On this happy return of another Anniversary, it must be a source of congratulation with every well-wisher of this Academy, to see here on the platform with our distinguished President, (Dr. Mott,) so many of the eminent men, who, like him, have at various times ably filled the same high position.

The presence of our honored ex-presidents, John W. Francis, Alexander H. Stevens, Thomas Cock, Isaac Wood, Joseph Mather Smith, and Willard Parker, lends additional grace, dignity, and interest to the occasion, well worthy of permanent historic remembrance. Long may they live to rejoice at the prosperity of this Academy, and to shed the lustre of their great names upon its labors.

This PRESIDENTIAL GALAXY, too, is naturally suggestive of the names of those who have filled the less important post of Orator. Ten years ago that venerable Nestor of the profession, the devoted and eloquent Francis, inaugurated your anniversaries by a characteristic oration, replete with learning, anecdote, and historic incident, before an unprecedented audience of more than four thousand spell-bound hearers, while thousands left unable to gain admittance. This mighty effort of the great and good man gave the community a just estimate of the value and importance of this learned body, which, it is to be hoped, we shall ever maintain. He was followed by the late lamented Manly. Then came the truthful and lucid Post; and next, the learned and critical Joseph M. Smith. After him, the elegant and accomplished F. Campbell Stewart; then the eminent, exact, and public spirited Griscom; and last, though not least, your own classic Watson.

Is it then a matter of surprise that I have manifested so much diffidence in following the footsteps of these distinguished men? Apologies on such occasions, are too frequently affected, but were I to proceed without some explanation, I should do injustice to you, and great violence to my own sense of propriety. When a member of this Academy but little more than one year, you conferred upon

me this distinguished honor; electing me in my absence, and without my knowledge or consent,—a compliment that I appreciate with all my heart; but a consciousness of my unfitness for the place prompted me at once to resign; when such men as Mott, Francis, Stevens, Smith, Green, Griscom, White, and others opposed my withdrawal, agreeing, (unofficially,) that my subject should be purely a professional one.

Silver Sutures in Surgery, is a subject that necessarily involves frequent and constant reference to my own labors, and their results; indeed, it has been the theme of my life for the last twelve years. In selecting it I am not ignorant of the delicacy of my position, and of my liability to be misinterpreted, and to be criticised by some who do not know me as you do. Nevertheless I shall speak as an American, plainly, frankly and fearlessly, feeling that you and the great mass of the profession will understand, and fully sustain me. So far as it concerns my experience, personal narrative, claims as a discoverer, or defence against aggression, I have a right to declare them openly "from the house-tops;" and for this in the abstract I hold myself responsible. But, whether the subject matter will be considered quite appropriate for the occasion, is a question only for the fastidiously censorious; and I shall dismiss that very summarily, by shifting its responsibility to the

broad shoulders of the gentlemen just named, at whose solicitation I stand here to-night.

You, who are familiar with the experience of that noble charity, the Woman's Hospital, will not be surprised, when I declare it as my honest and heart-felt conviction, that the use of SILVER AS A SUTURE IS THE GREAT SURGICAL ACHIEVEMENT OF THE NINETEENTH CENTURY.

For my country I claim the honor of this imperishable discovery, and seize this auspicious occasion to place permanently upon record a history of its origin and progress.

Many of you already know that it was not the result of mere accident, but of long, laborious and persevering effort, based upon the immutable principles of science, and forming one of the most beautiful examples of inductive philosophy.

Wishing to impress upon the profession its importance and value in general surgery, as well as in injuries from protracted parturition, I shall necessarily be compelled to draw largely and somewhat minutely upon my past experience. But this will be readily tolerated by a liberal profession; for, while I labor to establish principles, it will be legitimate to refer to dates, and times, and places, and persons, and circumstances, all of which are necessary to place for ever beyond cavil my claims and agency in this discovery.

In 1845 I conceived the idea of curing vesico-vaginal fistula, and entered upon the broad field of experiment with all the ardor and enthusiasm of a devotee. After nearly four years of fruitless labor, silver wire was fortunately substituted for silk as a suture, and lo! a new era dawns upon surgery.

This was on the 21st of June, 1849, since which time I have used no other suture in any department of surgery.

The American Journal of Medical Sciences for January, 1852, contains my article on "The Treatment of Vesico-vaginal Fistula," with full and specific directions for every stage of the operation. The silver suture, as then used, I called the "clamp suture," on account of its method of action in forcing, or "clamping" firmly together the surfaces to be united. Merely for its historical value, and to show the progress of improvement, it is here introduced.

Fig. 1, represents the anterior wall of the vagina, the posterior being cut up and laid open, thus exposing the fistula closed by the clamp suture.

By perforated shot compressed upon the silver wires, they are secured to leaden cross-bars or "clamps," which burrow in the vaginal tissue; the whole remaining till union by the first intention becomes firm, when, by clipping off the shots the sutures are removed.

In my own hands this method of using

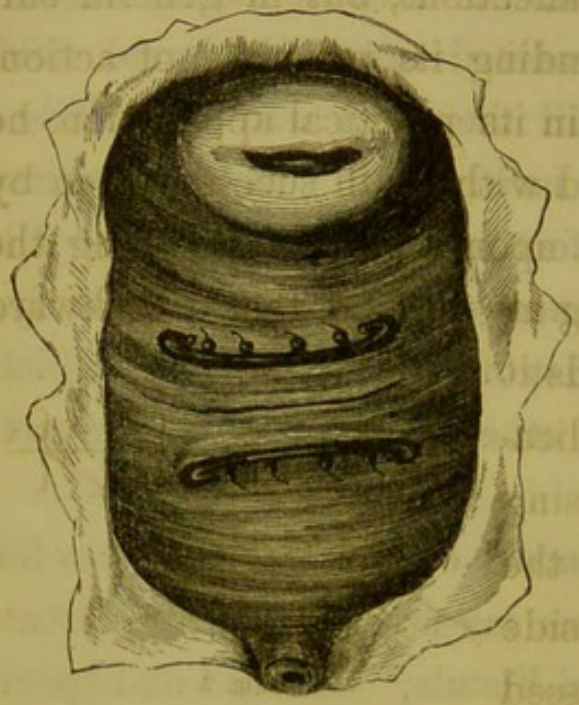

Fig. 1.

the silver wire in vesico-vaginal fistula was uniformly successful, because I always took good care to make a broad and free scarification of the edges of the fistula, and to pass the sutures so far from them that the cross-bars or clamps would burrow in the vaginal tissue, there to remain till the case was permanently cured. But my followers were not so successful, simply because these two important points were not fully appreciated. They complained that the sutures would cut out; a thing that never happened with me in but three or four cases, and they were amongst my first experiments, before learning thoroughly the art of applying them.

The city of Montgomery, Alabama, was the theatre of my early operations. Bad health compelled me to leave there in 1853. I then gave Dr. Bozeman of that place a partnership in business, and indoctrinated him in my peculiar method of operating for vesico-vaginal fistula, instructing him in my various modes of using silver wire as a suture, not

only in this class of affections, but in general surgery. Not understanding its principle of action, and therefore failing in its practical application, he was quite disheartened with his ill success, when by mere accident he fell upon a plan of fastening the wire, and so modifying my method, that in awkward or inexperienced hands it became easier of application. Instead of passing the wires through the leaden bars on each side of the fistula, he passed them through a concave disk or "button" which rests upon the surface of the parts to be united, as shown by fig. 2.

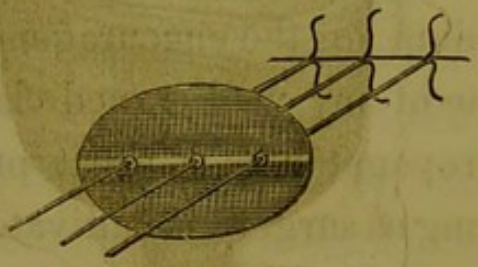

Fig. 2.

Notwithstanding the fact that the doctor lived in Montgomery for years, without any professional position till I gave it to him, that he is indebted to me for what he could never have obtained without my aid, he appropriates to himself every step of the operation that resulted from my own individual and unaided efforts,—even my silver wire and perforated shot, the only things of any real value whatever, and publishes it as his operation by a "new mode of suture," making strenuous efforts to place my labors entirely in the background.

I do not complain of modifications, but I do

complain of a disingenuousness that would be dishonorable even under widely different circumstances.

While I know that posterity will do me full justice, I do not even fear the verdict of my contemporaries, when the whole of the facts and their philosophy are laid plainly before a just and discriminating profession. But, Sir, if you wish to offer a premium for the encouragement of secret remedies, rob me of my well earned claims, as the discoverer and propagator of a great principle that shall live as long as surgery is cultivated as a science, or practised as an art;—and, if you are particularly desirous to drive your young men ambitious of honorable distinction, from their high resolves to elevate and ennoble our calling, show them that you are ever ready to thus endorse any attempt to detract from the meed of their self-sacrificing efforts.

An honorable sensitiveness on the score of professional claims and personal rights is natural, and comes home to every man, whether his reputation be already established, or merely prospective.—And no one, Mr. President, is more capable of fully appreciating this than your honored self, whose brilliant surgical achievements have so often been the object of envy and detraction.

But to the facts and their analysis:—Dr. B.'s paper "on vesico-vaginal fistula, by a new mode of suture," was published in the first No. of the Louis-

ville Review, for May, 1856. He there labors to show that nothing comparatively had been done for this injury till the use of his button, while with it, there could be no such thing as a failure. Although I knew very well why he failed with the clamp, still I was determined to see what advantage the button possessed over it, if any.

Having at the Woman's Hospital an ample field for experimental observation, I lost no time in testing his modification of my suture; and as my experiments were valuable in establishing a principle, I shall give a brief detail of them.

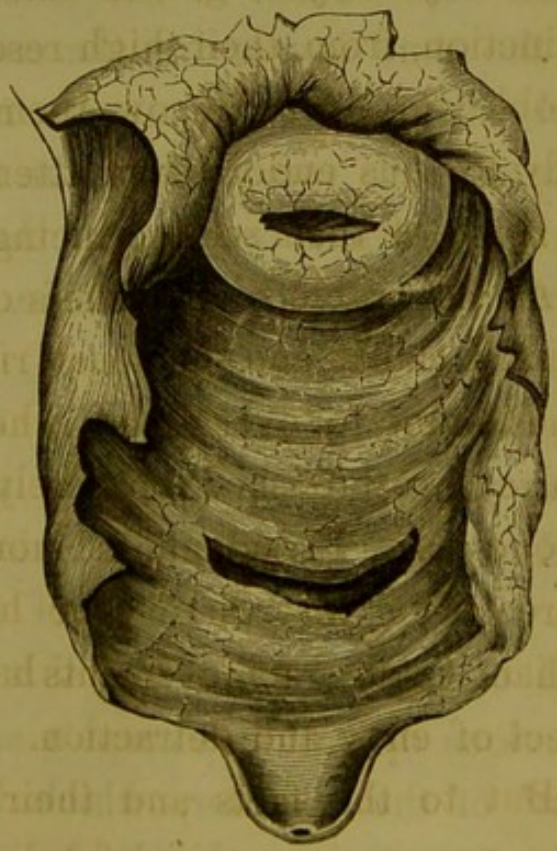

Fig. 3.

Case I. — The fistula was transverse, in the median line, about an inch above the neck of the bladder, with abundant tissue, and every thing favorable for an easy and successful operation. The wires were passed *as usual with me*, brought through the "button," and fastened with the perforated

shot. They were removed on the ninth day, leaving two small fistulous openings in the line of union, thus showing a failure of the "button," greatly to my surprise, for I could not imagine a better case for success. Fig. 4, *a b*, the line of cicatrized union, *c d*, the two little fistulas left in its track.

Fig. 4.

Case II.—Aged 57. A sister to the above, with a similar fistula, but a little nearer to the neck of the bladder. Sexual organs normally atrophied, as usual with women at her time of life. Operation on the same day, and in the same manner as Case I, and with a like unfortunate result; for when the sutures were removed on the ninth day, there was a small fistulous opening at the extreme end of the new cicatrix on the right side.

Case III. — Aged 37. A fistula extended from the meatus urinarius through the urethra and neck of the bladder, laying the septum open, to within ¾ of an inch of the cervix uteri. I had closed the whole of this fistulous track by a previous operation, except a small point in the *bas fond* of the bladder, which had been purposely left open for a catheter during the time the sutures were applied to the injured part below;

and now it only remained to close up this small fistula thus so favorably situated. The wires, (two,) were passed transversely and secured by the button.

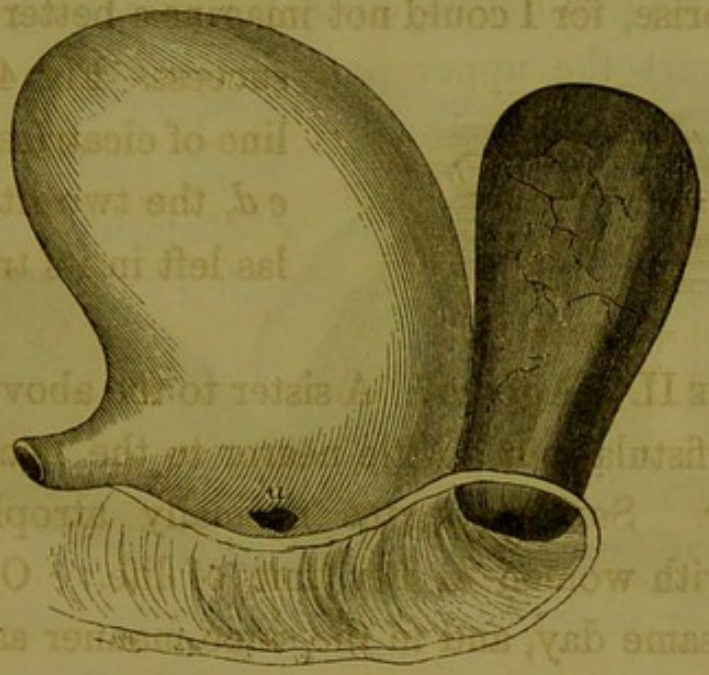

Fig. 5.

Fig. 5 shows the little fistula *a*, above described. The operation was similar to the two preceding, and had a like unfavorable result; an opening half the size of the former was left. Thus three very favorable cases for the clamp, had failed by the "button" of Dr. B.

Before this result was known I had applied it in four other cases, three of them unfavorable, and where I had not succeeded with the silver suture after my usual method by the "clamp."

Case IV. is one in which I had united the anterior and posterior walls of the vagina about an

inch above the urethra, leaving a small fistula not larger than the point of a common probe.

Fig. 6, shows the cervix uteri and the vesico-vaginal septum destroyed by the sloughing process. To convert the upper part of the vagina and the

Fig. 6.

bladder into one common receptacle, the posterior wall of the vagina, at *c*, had been united by the wire and clamps to the anterior at *a*, leaving a small opening not larger than a No. 7, sewing needle. To this the button was applied, and failed.

Case V. was similar, with a greater loss of substance. There was but a small part of the neck of the bladder attached to the urethra.

The mouth of the vagina had been closed by uniting its posterior wall to the urethra just as they lay naturally in contact, leaving two little fistulæ not larger than a common-sized probe, one at each extremity of the line of union. I had failed to

close these by the silver wires, secured by the clamps or leaden bars, and now applied them with the button. The operation in both instances failed.

CASE VI.—A small fistula *a*, fig. 7, at the neck of the bladder; tissue scanty and indurated; button failed. [*a*, *b*, line of union effected by a distinguished surgeon before her admission to the Woman's Hospital.]

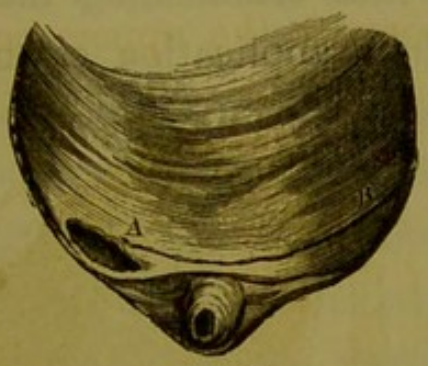

Fig. 7.

CASE VII.—Here the injury was at the neck of the bladder, (see fig. 9,);—The button was used, and union took place.

Six successive failures * out of seven operations with the silver suture, secured by Dr. B.'s method, was a most astonishing result; and it was but natural to inquire into the cause. I had supposed that his success was due to the button, which was not the case, as the sequel will show.

Anxious to test fairly the advantages of this plan of securing the silver wires, I had performed these seven operations in as many days, and the last one was executed before the result in any preceding case was known.

* Subsequently cured by the silver wire, as a simple interrupted suture.

Since the above was written, Dr. B. has published cases in which his button failed repeatedly in his own hands.

In the first six operations the wires were passed precisely as I do when they are to be fastened by leaden bars and perforated shot, and they all failed; thus establishing the fact, that the principle in their application essential to success with the

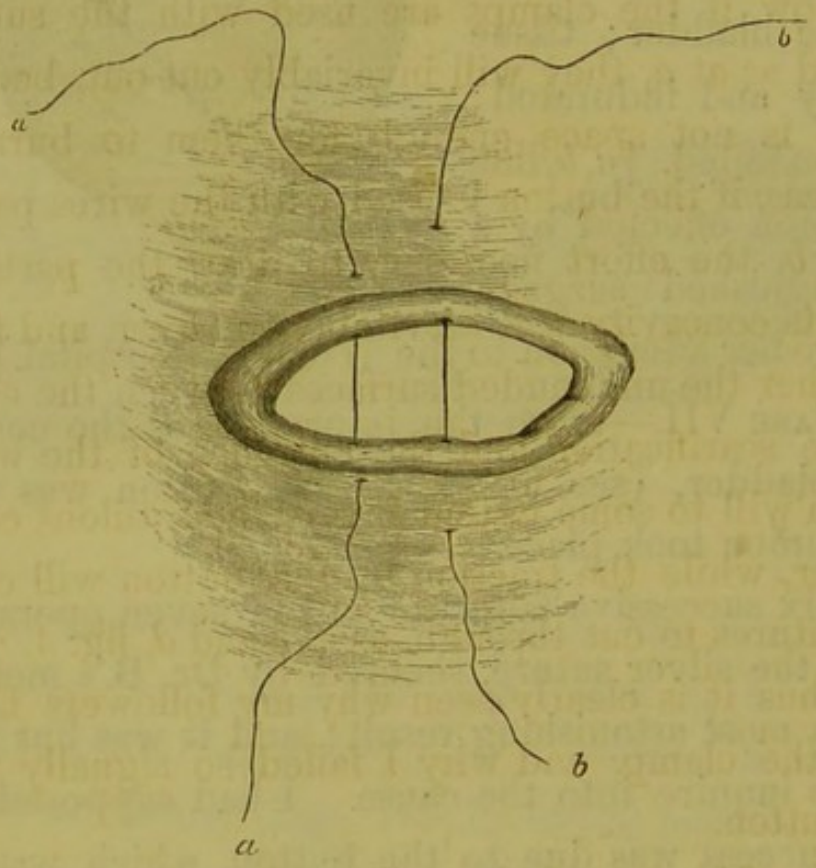

Fig. 8.

clamps, was the one to produce a failure by the button; and vice versa, the principle of success by the button was that of failure by the clamp.

Let me explain—

If the clamps or leaden bars are to be used to secure the wires, the sutures must be passed as shown at *b*, fig. 8, so far from the edges of the fistula as to allow the bars to sink down into the

vaginal structure, making it utterly impossible for them to cut out. But if the disk or button is to be used, then the sutures are to be passed very near, it matters not how near, the edge of the fistula, as at *a*.

Now if the clamps are used with the sutures passed as at *a*, they will invariably cut out, because there is not space enough for them to burrow; whereas, if the button is used with the wires passed as at *b*, the effort necessary to draw the parts up into its concavity will inevitably roll over, and force together the undenuded surfaces between the edges of the scarification and the entrance of the wires, which will to some extent invert the fistulous edges proper, while the traction by the button will cause the sutures to cut through, as at *c* and *d*, fig. 4.

Thus it is clearly seen why my followers failed with the clamp, and why I failed so signally with the button.

Fig. 9, is intended to show the relations of the fistula in the seventh case, which was the only successful one of the series. It was just at the neck of the bladder, the tissue was deficient, and the edges inverted, or turned towards the pubic arch. Here the sutures were passed close to the edges of the fistula, as shown in the figure; but when the button was to be applied, I found that it had to be *convex* instead of *concave*, as so particularly recom-

mended by Dr. B. Notwithstanding this, union took place. If the button had been made with a

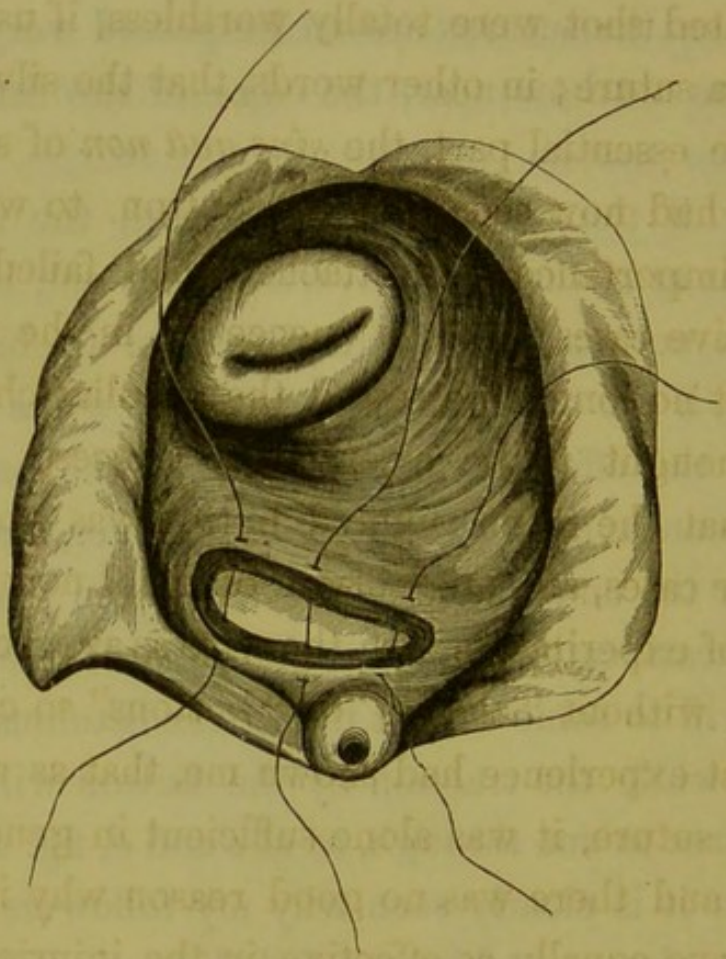

Fig. 9.

concavity, and thus applied, forcing the edges of the fistula up into it whether or not, the wires would have cut out before union could have been effected.

These cases demonstrated very clearly to my own mind that Dr. B. had mistaken the philosophy of the suture. He attributed its success in his hands to the button or disk, whereas this is wholly an unnecessary addendum. The truth is, that the great success of these operations is due entirely to

the silver wire. I had long ago demonstrated, over and over again, that the clamps or leaden bars and perforated shot were totally worthless, if used with silk as a suture; in other words, that the silver wire was the essential part, the *sine quâ non* of success; and I had now seen that the button, to which so much importance was attached, had failed in six successive cases, while it succeeded in the seventh when it no longer possessed the peculiar characteristic thought to be essential to success. Seeing thus that the much vaunted button was obnoxious in some cases, and nugatory in others, I now began a series of experiments with the wire as an interrupted suture, without "clamps" or "buttons" so called.

Past experience had shown me, that as an interrupted suture, it was alone sufficient in general surgery: and there was no good reason why it should not prove equally as effective in the injuries resulting from tedious labor. It was accordingly applied in the following case on the 24th of June, 1856.

Ellen, aged 30, had been the subject of repeated operations in various hospitals, when at last she fell into the hands of Dr. B. Fordyce Barker, the able Professor of Obstetrics in the New York Medical College, who sent her to the Woman's Hospital.

The fistula was very large, extending from the cervix uteri down to the neck of the bladder, and

involving the loss of nearly half of the vesical septum. A large mass of inflamed and hypertrophied mucous

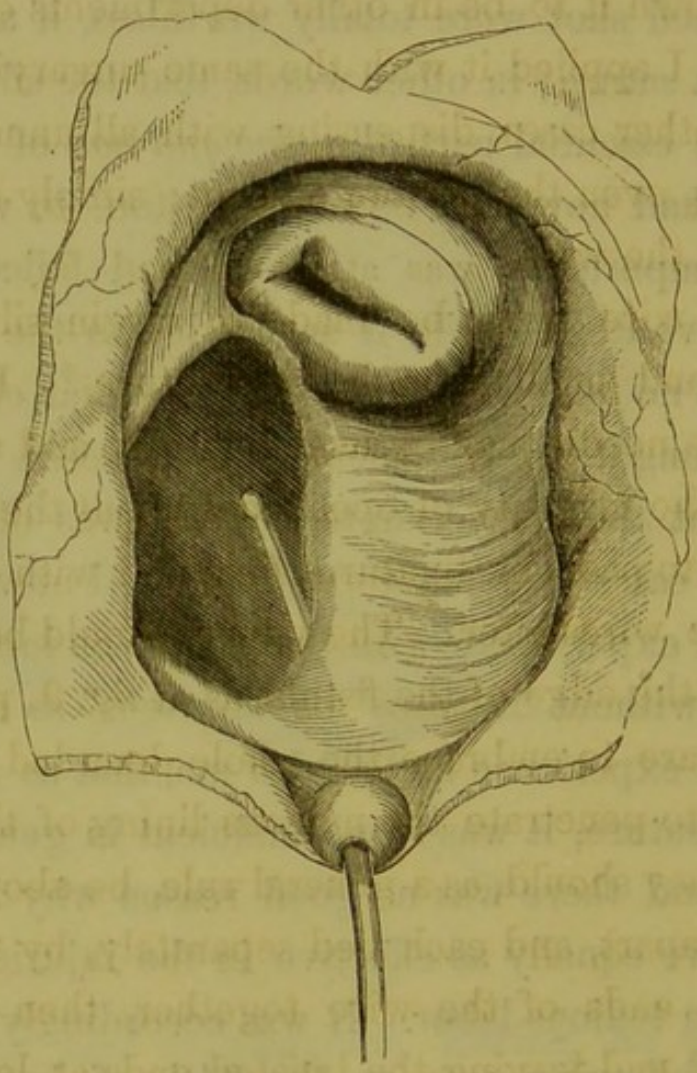

Fig. 10.

membrane from the cavity of the bladder protruded through it into the vagina, often becoming strangulated, and producing the most intense suffering.

Fig. 10 shows its relations. After proper scarification, seven interrupted silver sutures were passed transversely and fastened, each separately, by a perforated shot. On the 8th day they were removed. The cure was perfect.

This case with all its difficulties satisfied me that the silver wire was all sufficient here, as I had long known it to be in other departments of surgery; and I applied it with the same unvarying success in other cases, dispensing with all unnecessary addenda, even the perforated shot; simply tying or twisting the wire.

The wire must be made of virgin silver, annealed, and small enough for a suture.* In some cases the needle may be armed with it, and so used; but in the majority of operations about the vagina, I prefer to pass silk ligatures first, and with these to draw the wires after. The sutures should be passed in, near the edge of the fistula, as at fig. 9, page 20, taking care to embrace the whole denuded surface, but not to penetrate the mucous lining of the bladder. They should, as a general rule, be about $\frac{3}{16}$ of an inch apart, and each tied separately, by twisting the two ends of the wire together, then cutting them off, and leaving the twisted ends at least half an inch long, to facilitate their removal. (See figs. 11, and 12.)

Fig. 11, shows the method of twisting the wire. Two sutures are represented as secured and cut off, with the twisted ends bent flatly down on the sur-

* Mr. Berenbroick, No. 83 Duane street, makes two sizes for me, No. 28 and 29, the last being the finest and most used.

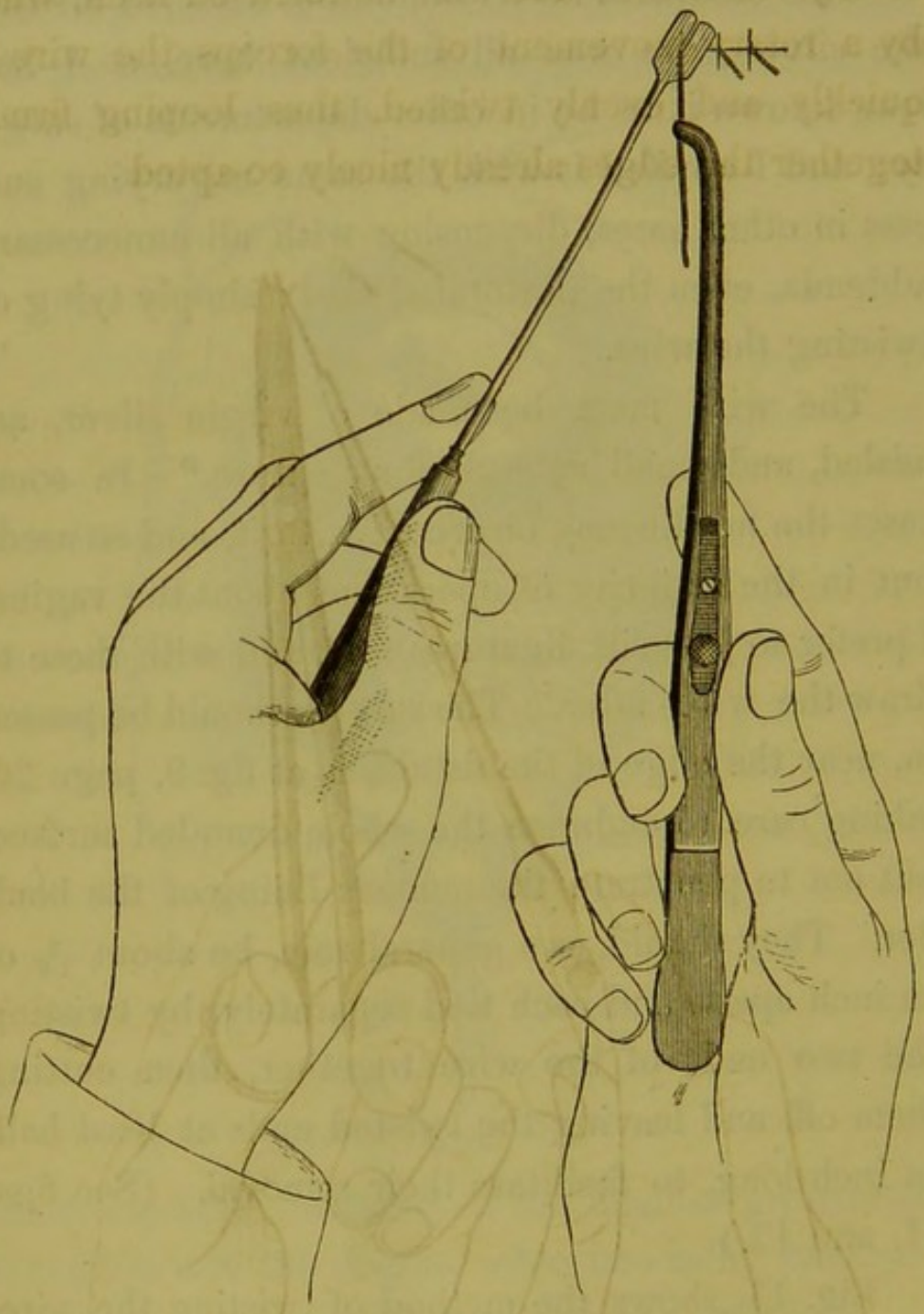

Fig. 11.

face, while the third is undergoing the process of torsion.

The fulcrum of support is held firmly in the left hand, while a pair of forceps in the right makes

steady traction on the wire doubled on itself, when by a rotary movement of the forceps the wire is quickly and evenly twisted, thus looping firmly together the edges already nicely co-apted.

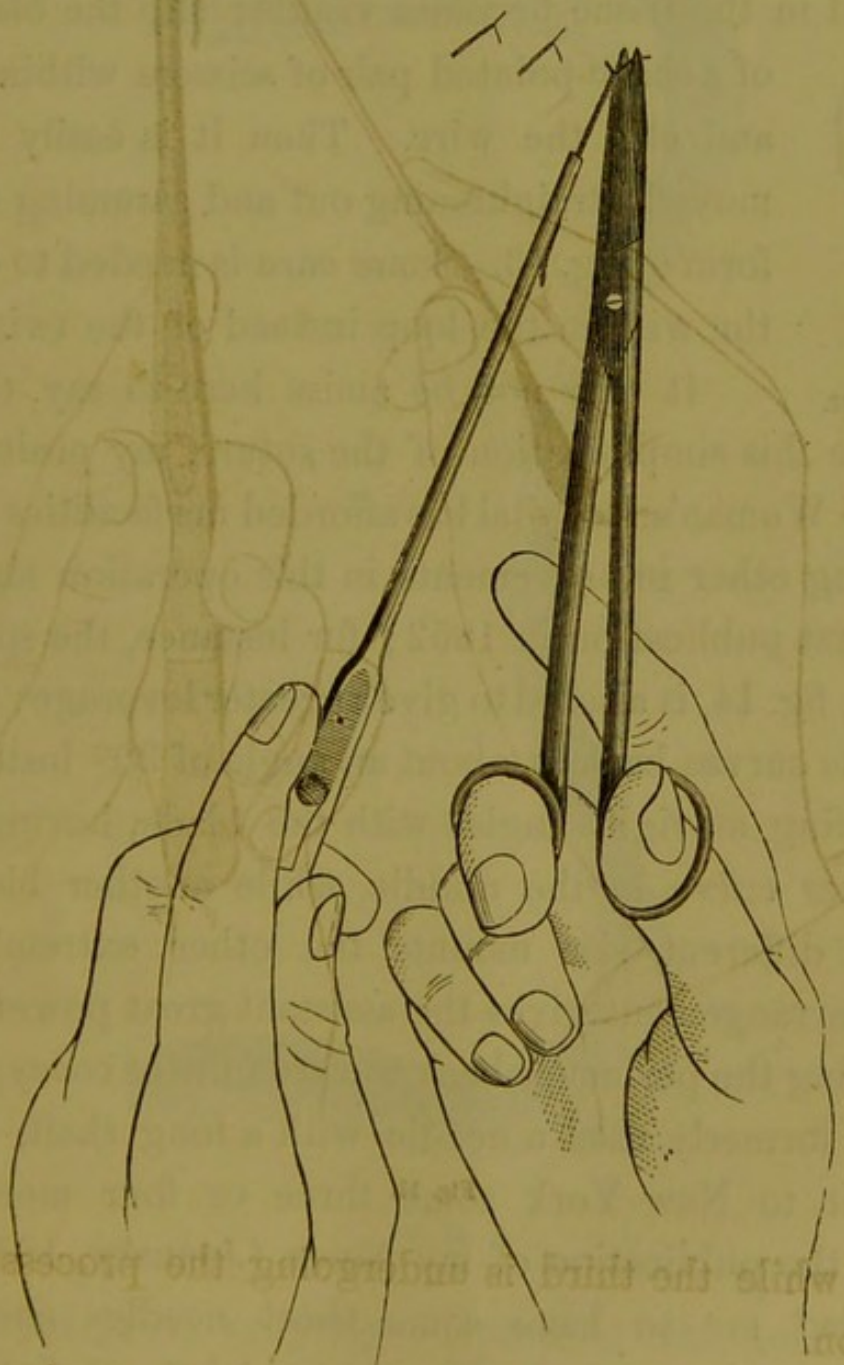

Fig. 12.

It is unnecessary to allow the wires to remain longer than the 8th day. To remove them, take hold of the twisted end with a long delicate pair of forceps, fig. 12, pull it gently out, till the loop which was buried in the tissue becomes visible; slip the blade of a sharp-pointed pair of scissors within it, and clip the wire. Then it is easily removed, straightening out and assuming the form of fig. 13. Some care is needed to cut the wire in the loop instead of the twist.

Fig. 13.

It may not be amiss here to say, that beside this simplification of the suture, my position at the Woman's Hospital has afforded me facilities for making other improvements in this operation since my first publication in 1852; for instance, the speculum, fig. 14, is altered to give a greater leverage: the handle curves back at about an angle of 30° instead of being at right angles with the blade, having a counter curve in the middle, while another blade of a different size mounts the other extremity. This arrangement gives the assistant great power in drawing the perineum back towards the os coccygis.

I formerly used a needle with a long shaft, but a visit to New York some three or four months after the publication of my paper, (January, 1852,) enabled me to have some short needles and a needle-holder made by Tieman, which among other things have been appropriated by the writer in

the Louisville Medical Review before alluded to; but I now prefer a simple pair of forceps with

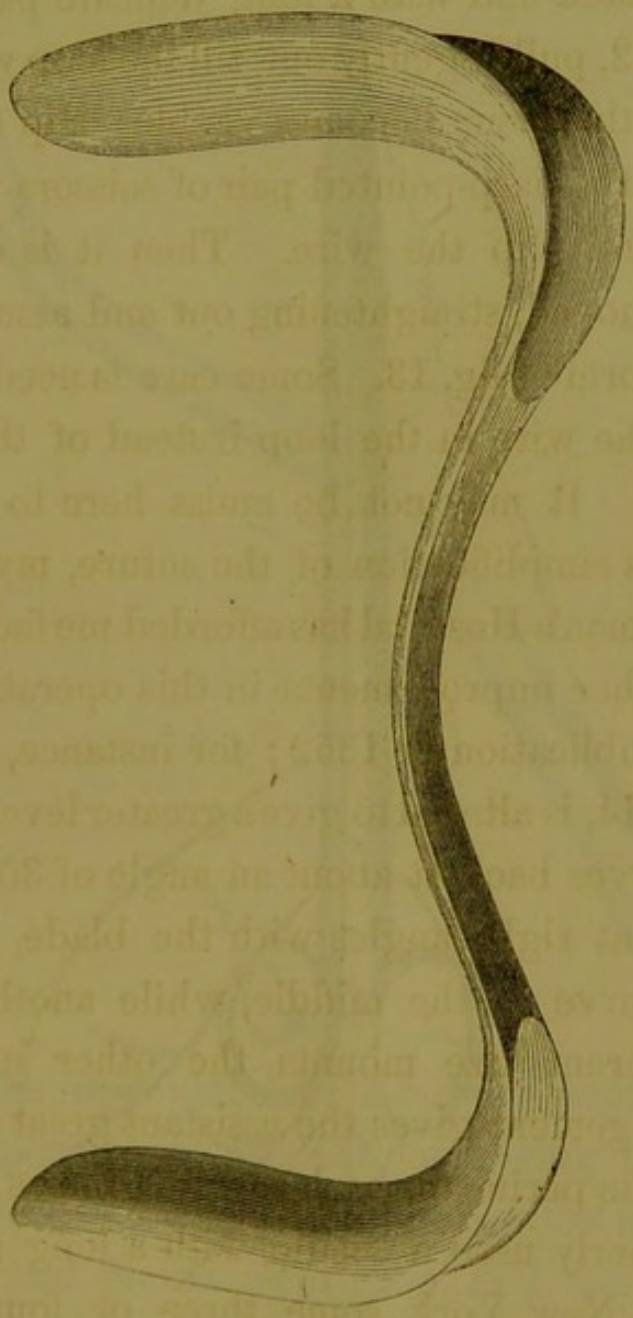

Fig. 14.

serrated jaws, properly adapted to the needle as seen in fig. 15.

The catheter is also improved so as to project

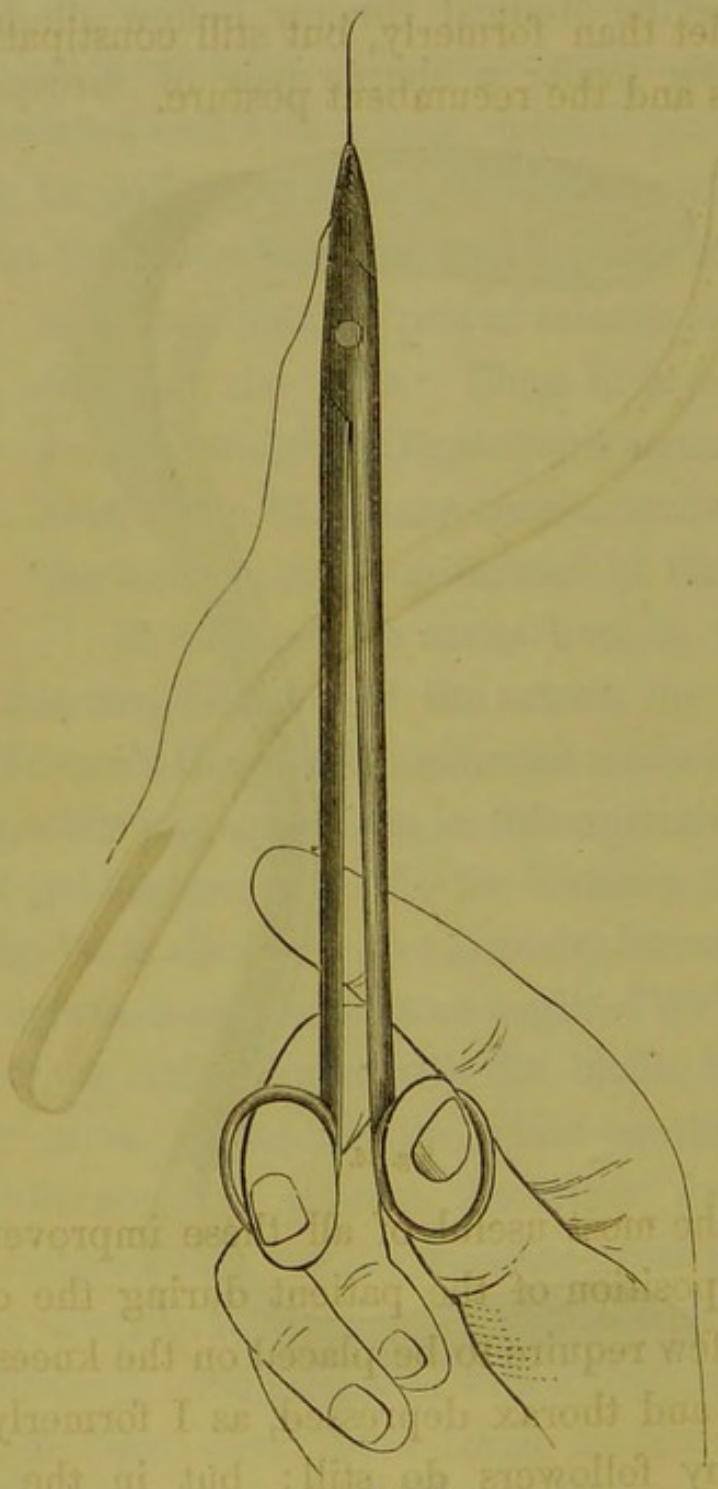

Fig. 15.

beyond the vulva, and drop the urine in a cup, thus protecting the person and bedding.

Another improvement is in allowing a more

liberal diet than formerly, but still constipating by anodynes and the recumbent posture.

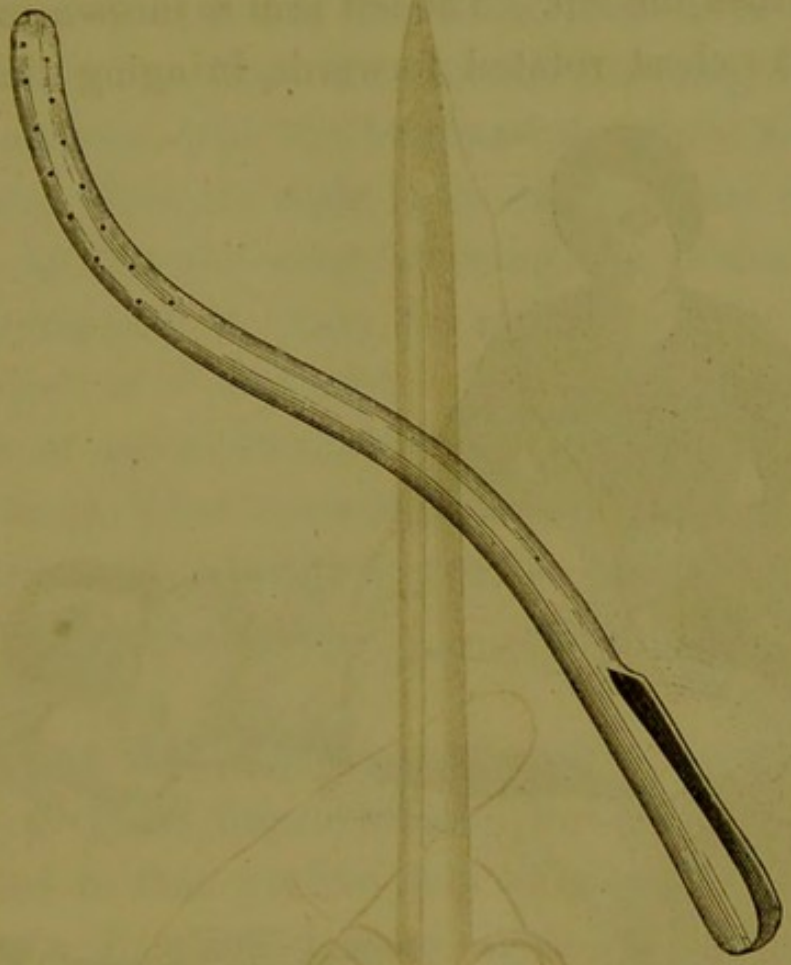

Fig. 16.

But the most useful of all these improvements is in the position of the patient during the operation. A few require to be placed on the knees with the head and thorax depressed, as I formerly did, and as my followers do still; but in the great majority of cases, the patient may lie on the left side, while the operation will be executed with equal facility to the surgeon, and, of course, with more ease to the patient.

In this position the thighs are to be flexed at about right angles with the pelvis, the right a little more than the left. The left arm is thrown behind, and the chest rotated forwards, bringing the ster-

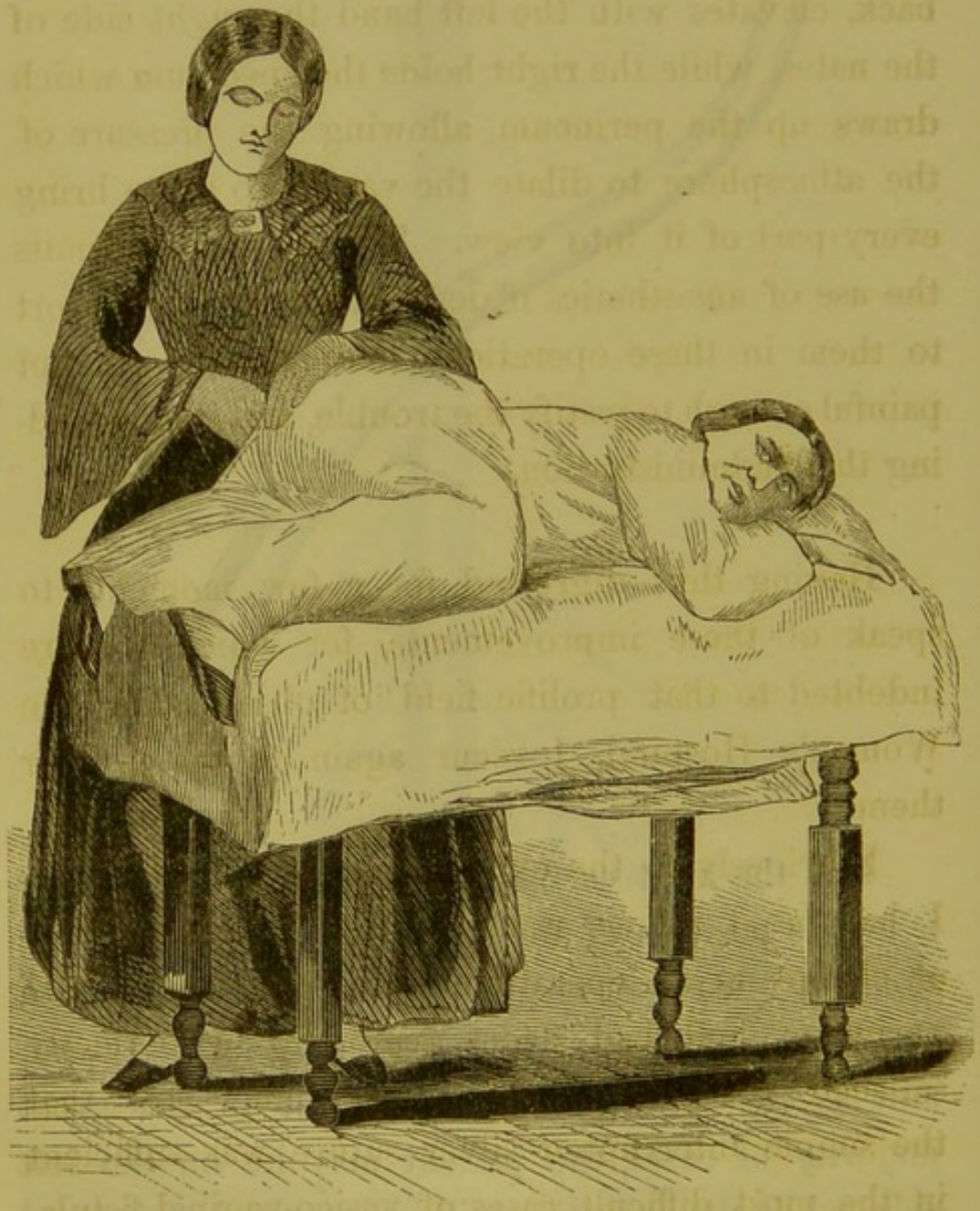

Fig. 17.

num quite closely in contact with the table, while

the spine is fully extended, with the head resting on the parietal bone.

The patient being thus rolled over as much as possible on the front, the assistant standing at her back, elevates with the left hand the right side of the nates, while the right holds the speculum which draws up the perineum, allowing the pressure of the atmosphere to dilate the vagina so as to bring every part of it into view. This position permits the use of anæsthetics if desired, but I never resort to them in these operations, because they are not painful enough to justify the trouble, and risk attending their administration.

Having thus digressed for a few moments to speak of these improvements, for which we are indebted to that prolific field of observation, the Woman's Hospital, I recur again to the proper theme.

Previously to the experiments already detailed, I had used silver sutures with the leaden bars or clamps in all operations about the vagina, and perineum, and had every reason to be perfectly satisfied with the results; but seeing now that the simple interrupted silver suture was sufficient in the most difficult cases of vesico-vaginal fistula, I lost no time in extending its use to lacerations of the perineum, and found it here quite as effec-

tual; hence I adopted it in all such cases, not because it is more efficacious, but because it is simpler in its application, and quite as certain in its results. And in no instance of lacerated perineum, it matters not how extensive, have I ever resorted to a division of the sphincter ani, which, (with the silver suture,) is a horrible and wholly unnecessary complication.

It is strange that the Profession have been so slow in adopting this suture. From the day its wonderful effects were witnessed in vesico-vaginal fistula in 1849, I have never used any other suture in any department of surgery.

Wishing to impress upon the Profession its great value in general surgery, and at the same time, to render permanently historic my claims to priority, I propose to show what it has already done, as contrasted with the usual methods. Hence some little detail of facts, and dates.

In *plastic surgery* it is the great desideratum. In May, 1850, a gentleman had the misfortune to lose a good part of the left ala nasi. In the operation eight interrupted silver sutures were used—they were removed on the 7th day: union was perfect, and he soon went home with some slight tumefaction of the parts, which gradually subsided.

In the course of a fortnight he returned, saying that in wiping the perspiration from his face, he discovered some pricking substance at the seat of the operation, which he supposed to be a bit of wire. He was right; the wire was there, but easier felt than seen. It was removed, and found to be half an inch long: it had remained there four weeks, producing no sense of soreness, and no inflammation or suppuration as a silk ligature would have done, thus establishing the great and important principle that silver was as innocuous as lead, and, like it, might become sacculated, producing no irritant or poisonous effect whatever.

I have used this simple suture with unvarying success in other plastic operations, a detail of which is here unnecessary.

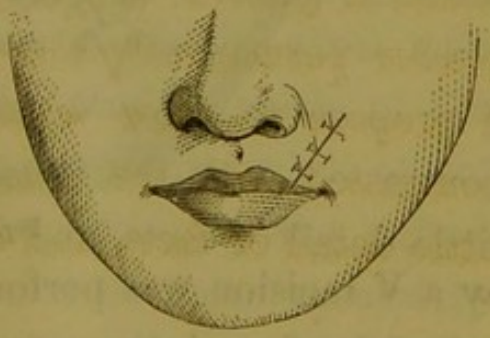

Fig. 18.

In 1852 a little boy some 8 years old received a blow on the upper lip, near the left commissure, cutting it through for ¾ of an inch. Three interrupted silver sutures were applied, and no other dressing. I saw no more of him till the ninth day: union was perfect, the wires remaining precisely as I had placed them. Their removal was like that of a delicate earring from the ear long used to wearing it.

In 1853 a gentleman called on me with a very bad cancroid warty excrescence, involving a large part of the lower lip, which had resisted all remedial efforts. Its removal was advised. He said he could not possibly spare the time necessary for a cure; I told him that twenty minutes would suffice for the operation and dressing, and that he could then go home, (some 80 or 100 miles,) and return in a week. He consented. The usual operation

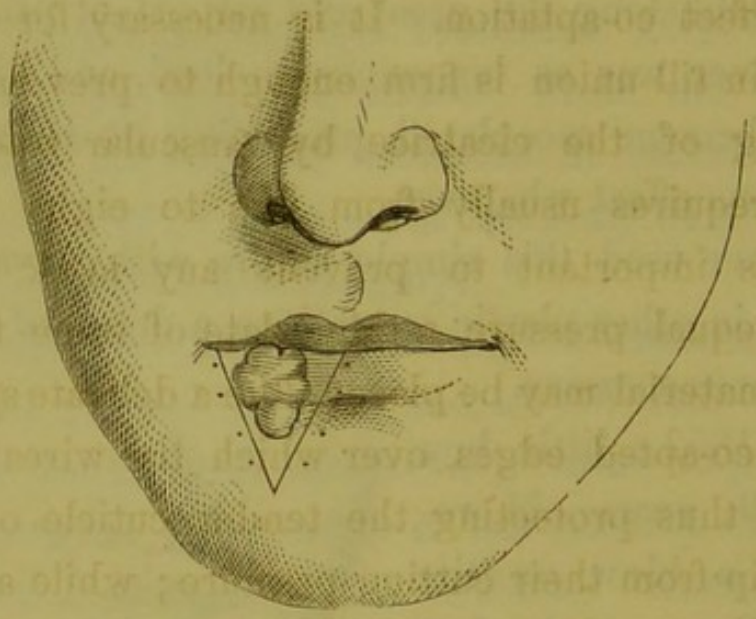

Fig. 19.

by a V incision was performed, and the cut surfaces united by four interrupted silver sutures, sustained by a single strip of isinglass plaster, with no other dressing. At the appointed time he returned with the parts perfectly united throughout, the wires producing no inflammatory effect whatever.

Would any surgeon have been justifiable in sending such a case as this away for so long a time with

the old-fashioned method by silk ligatures or the twisted suture? Certainly not. And yet I felt no anxiety about the result, so great was my confidence in the safety and security of the silver wire, as then demonstrated by daily experience.

In *Hare-lip* the results of this suture are beautiful. They should not be further apart than $\frac{3}{16}$ of an inch, or even less; thus affording good support and perfect co-aptation. It is necessary for them to remain till union is firm enough to prevent any widening of the cicatrice by muscular traction, which requires usually from five to eight days. As it is important to prevent any mark from their unequal pressure, a thin plate of some transparent material may be placed, like a delicate splint, on the co-apted edges, over which the wires may be tied, thus protecting the tender cuticle of the child's lip from their cutting pressure; while at the same time it allows an inspection of the united parts, which, if necessary, can be more accurately fitted by gently insinuating a small probe under the translucent medium: a thin bit of glass in the absence of any thing else answers the purpose admirably well.

For this purpose I have had prepared some little plates of ivory, made transparent by dissolving its earthy constituents. This prepared ivory is

thin, light, and capable of being cut or moulded into any form, but it is objectionable, as it softens at the temperature of the body.

However, nature has given us a better material for this purpose, one to be found everywhere and at any time. A clarified goose-quill split into sections, softened in boiling water, and then flattened out by heavy pressure, fulfils every indication in this "hare-lip suture." So far as absolute success in the operation is concerned, nothing can be added to the silver wire to make it more certain, and these trans lucent media are recommended merely for the pur pose of preventing scars that may result from the pressure of the wire.

In *Wounds of the Scalp*, I have often applied silver sutures, and here they possess a peculiar fitness. They do away with the necessity for sticking plasters, and there is no need of a razor. Besides, of all regions of the human body this is most liable to traumatic erysipelas, hence the importance of dispensing with silk as a suture.

Dr. Emmet, the accomplished Assistant Surgeon to the Woman's Hospital, removed in December, 1856, an encysted tumor from the scalp of a lady aged 62. It had existed some forty years, giving her no inconvenience until a few months before, when it increased rapidly in size and became tender

on pressure. Six silver sutures and a water dressing were applied. On the eighth day they were examined for the first time. Found union by the first intention—the wires had produced no irritation whatever, and from appearances they might have remained there without it for an indefinite period, although she was below the average state of health.

Having applied this simple suture with the same unvarying success in all the minor operations, which it is here needless to detail, would it not have been strange had I failed to try it in the bloody or heroic ones? Indulge me a moment to enumerate a few of them.

In 1849, 1852, and 1853, I removed the *Mamma*, applying this suture, the number in each case varying from eight to seventeen. The wires were allowed to remain from seven to fifteen days. It is almost needless to say that in every case the result was the same as in the smaller operations,—complete cohesive union.

In 1852, (February,) I removed the principal part of the *lower jaw* bone for osteo-sarcoma, in a negro woman some 50 years old. It was divided at the angles, thus necessitating an incision of about ten inches after Mott's plan. The wound was

united by eighteen silver sutures, and a simple sustaining bandage applied. The whole length of it healed by the first intention, except an isolated point at the middle of the chin, through which the retaining ligature of the frænum linguæ had been passed for security. The wires were not removed for ten days. Had silk been used as a suture there would have been an absolute necessity for their removal in three days at the farthest, and even then it is almost certain that the bed of each suture would have been a suppurating sore.

In 1849, 1850, and 1852, I used silver sutures *in Amputations* of the thigh and leg, and in every case produced union by the first intention throughout the whole extent of the wounds with the exception of the point left for the passage of the ligatures.

In all amputations, surgeons knowing the bad effects of ordinary silken sutures, have been in the habit of applying as few as possible, and trusting to adhesive plasters and bandages to retain the edges of the flaps in contact. The poisonous properties of silk render its early removal imperative; hence the wound must be disturbed before adhesion is firm, and thus mischief results from the surgeon's necessary interference. But when the silver wires are applied, there is no necessity whatever, under

ordinary circumstances, for any interference till the parts are firmly united.

They must be placed near enough together to bring closely and accurately into contact every portion of the edges of the flaps, which may now be sustained by a few long narrow strips of Liston's Isinglass plaster. It takes a little longer, and it is therefore a little more trouble, to apply nicely twelve or fifteen silver wire sutures, than to stick in clumsily four or five great silk ligatures; but when the stump is dressed there is no more trouble with it, and the wires may not be removed for eight or ten days, or even longer. Moreover, there is not so much excuse for compresses, bandages, Maltese crosses, and all the bungling contrivances often resorted to after amputations, while there is every facility for applying a light water dressing, which is the only thing usually needed in such cases.

In 1855, at the request of Dr. Willard Parker, the distinguished Professor of Surgery in the College of Physicians and Surgeons, I applied silver sutures to a large *abdominal section* in the case of a young lady, the subject of Ovariotomy. They were passed deeply through the parietes of the abdomen, but not perforating the peritoneal coat. Union by the first intention was complete—the sutures remaining a week.

Other surgeons, members of this Academy, have

been using this suture, amongst whom may be mentioned Mott, Post, Parker, Buck, Watson, Sayre, Van Buren, James R. Wood, Markoe, Henry Weeks Brown, and many others. Professors Mott, Post and Parker, have each for the last four years taken great pains to instruct their several classes in the use of this American discovery.

But amongst the earliest to appreciate its importance in connection with medical education stands pre-eminent, Dr. Gilman, the learned Professor of Obstetrics, etc., in the College of Physicians and Surgeons.

Sufficient detail in the way of facts and dates has now been given to place beyond controversy my claims, not only to priority in the discovery and promulgation of a great principle, but in its universal application in general surgery.

But all the special departments of surgery have not been indicated in which this simple and wonderfully beautiful suture may be successfully used. As soon as I became aware of its value, I was very anxious to apply it in *Wounds of the Intestines*, and particularly after the occurrence already alluded to, where a wire remained four weeks in the nose without producing the slightest disturbance; but no opportunity presented till April, 1853.

A young negro man was stabbed in the left side

between the sixth and seventh ribs; and in the abdomen there were two cuts, through which protruded large masses of wounded intestines. These intestinal wounds (some of them transverse, and others diagonal) were closed with simple interrupted silver sutures, which were cut off close to the intestine, and the whole returned to the abdominal cavity. He lived twenty-four hours.

The post-mortem examination, made by Dr. B. C. Jones of Montgomery, Alabama, and Dr. Cummings, now of New Orleans, showed that the thoracic wound had passed downwards through the diaphragm into the stomach. The perforation in the diaphragm was completely plugged by omentum, but not till the contents of the stomach had passed through it into the pleural cavity.

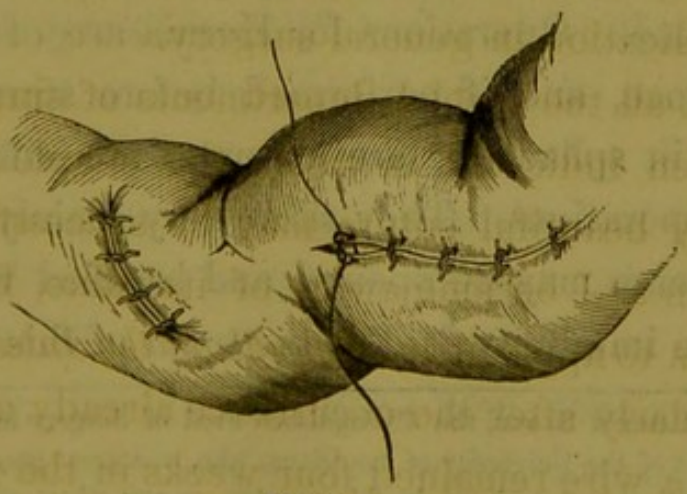

Fig. 20.

There was no effusion or evidence of active inflammation in the peritoneal cavity; the silver wires had neatly closed the wounds in the bowel,

(duodenum cut, ileum and jejunum transfixed in three places,) and for an inch around them there was a delicate little effusion of plastic lymph nicely gluing the wounded parts to the adjacent peritoneal coat, while every thing else was in a perfectly normal state.

Fortunately he lived long enough to indicate pretty clearly the propriety of using silver sutures in wounds of the intestines. I expected them to become sacculated like lead, and to remain there innocuously, to be taken care of in nature's own way.

I have long felt satisfied that the great danger from *Wounds of the Peritoneum* was due not so much to the mere admission of atmospheric air as to the universal use of ligatures and sutures, left like setons to irritate and inflame this delicate serous membrane. Operations for Hernia are of frequent occurrence, and if performed before strangulation results in sphacelus, are amongst the safest of all grave operations. They show very plainly that the peritoneum may be opened and handled with comparative immunity.* For the truth of this assertion

* Dr. WARREN STONE, the distinguished Prof. of Surgery in the Medical Department of the University of Louisiana, who, as a great practical teacher, ranks with the most eminent in this country, or any other, says of hernia, "That no disease is so dangerous to life, and yet so entirely remediable"—that "the bowel is in danger from the moment it is strangulated, and should be relieved as soon as possible"—that "the hernial sac can be exposed without the slightest risk"—and that "if it should be necessary to open the hernial sac, it can be done with as much safety as venesection can be performed at the bend of the arm." [*New Orleans Medical Journal, Jan.* 1858, *page* 79.]

I appeal here to Mott and Stevens, to Watson and James R. Wood, and to every other surgeon in this Hall. Why then such dread of peritoneal wounds? Why such fear of peritonitis in Ovariotomy?

But is there any wonder that Ovariotomy is so fatal, when a great silken cord strangulates the pedicle and hangs from the abdomen, its whole track a suppurating sinus? And, when six, or eight, or ten silken sutures close the external wound, each one answering most admirably the purpose of a seton?

Simpson, the great European luminary of Obstetric Surgery, plainly saw the source of danger, and says, "If betimes it come to be recognized as a surgical operation fit and proper in such cases of ovarian disease as he adverted to, he had no doubt *the steps of the operation itself would meet with improvements*," and that "probably it might be possible to devise some other measures of securing the large vessels, principally *veins* be it remarked, of the pedicle, and thus save the several dangers arising from the ligature."*

EUROPE, through this great man, thus calls for improved measures of safety, which AMERICA now proudly lays at her feet. For silver sutures and silver ligatures are to do more to rob this dread operation of its dangers than all else that has yet

* Obstetrical Works, 1st Series, page 256.

been suggested. Let the pedicle of the tumor be firmly tied with a silver, or leaden wire—let the external wound be united by silver sutures—let the vaginal *cul de sac* be punctured, (as has already been done by our distinguished Fellow, Prof. Peaslee,)* for a canula to drain off, through the most dependent point of the peritoneal cavity, any exudation, whether of blood, serum, or pus, and a degree of security will be given to this operation that may yet rank it with hernia under its most favorable circumstances.

But enough has been said to fix attention upon the importance of this suture, and *its universal applicability in general surgery.*

It is to revolutionize surgical dressings, and to ensure more beautiful and prompt cures. With it, properly applied, there can be no gaping wounds to heal by the suppurating process, where there is skin enough to cover a stump; and in many cases erysipelatous inflammation, and even hospital gangrene, may be averted by substituting it for silk as a suture.

After all amputations we must use sutures of some sort; and how often do we see silk ulcerating out, and creating such tendency to suppuration, that we are compelled to remove them before there is sufficient union to resist the retraction of the tu-

* American Journal of Medical Science, Jan. 1857.

mefied flaps. But with silver there is no inflammation, no suppuration, no cutting out of sutures, no gaping or retraction of flaps, and therefore no necessity for disturbing the dressing till all is firmly united and permanently well.

This is no vain imagining: though enthusiastic, I am not wildly so, for all this has been familiar to me for the last eight years, and I but speak what I know. The next eight years will not find an educated physician anywhere who will dare to use silk sutures, for the silver thread will now become as essential to the dressing case as the needle itself; and if I may be allowed to venture a prediction, I will say that fifty years hence the statistics of our hospitals will show a vast improvement in their bills of mortality after great operations, and this improvement will be due mainly to the use of silver as a suture.

Look at its results in injuries of the vagina. Before this discovery, operations for vesico-vaginal fistula, and its congeneric affections, were often attended with risk to life, while a cure was a mere accident. But how is it now? Why, every case is easily and perfectly curable that has tissue enough to render any operation whatever practicable; while a failure is the exception to the rule. Besides, there is not the least risk to life, as there is never any fever, or the slightest constitutional disturbance.

I am not claiming too much for this suture when I say, that the same relative results must be attained in all other surgical operations requiring sutures, if the same method be adopted.

My language is in nowise extravagant; and I shall yet live to see the day, when the whole profession of the civilized world will accord to this simple discovery the high position of being the most important contribution as yet made to the surgery of the present century.

The only thing at all comparable to it is Etherization; and in practical results of permanent benefit it is absolutely contemptible, when compared with those from the universal use of silver sutures in the broad domain of general surgery.

Having now briefly shown that I have used silver sutures with uniform success in almost every imaginable injury requiring sutures, these practical remarks might very properly be here closed; but, as concentrated efforts have been made in various quarters to rob me of full credit for my labors, I have thought it due to truth, to justice, to posterity, and to myself, to place permanently upon record a history of the circumstances attending this discovery.

Some of my contemporaries will not approve the measure, but when this generation passes there

will be no difference of opinion amongst critics on this point; besides, it will not be unprofitable should it stimulate but one young aspirant for fame and fortune to redoubled efforts, under unpromising circumstances and opposing obstacles, to the accomplishment of still more glorious triumphs for our noble profession.

Although fully fortified by the necessity of self-vindication, still I hesitate and tremble; but why should I be afraid to write, and speak, and publish to the world, what I am not ashamed to acknowledge to any individual, viz.—that it was all the result of a Providential train of circumstances over which I had no control, and that it pleased God to lead me in this direction in spite of my predilections.

As the field of my labors thus partakes somewhat of a missionary character, a labor of love under Divine guidance for the furtherance of a truly benevolent purpose, you will pardon a personal narrative, which under other circumstances would be inexcusable.

For the first ten years of my professional life the treatment of any disease peculiar to woman was ignored as far as possible. Surgery was my ambition, and it was gratified, for my head, and heart, and hands were full. This was due, not to any particular merit on my part, but, to a fortunate position amongst a liberal and enlightened profession in the

noble state of Alabama, a profession, which, for intelligence and a chivalric *esprit de corps*, is not behind that of any other state in this great confederacy.

Thus situated, a case of vesico-vaginal fistula was sent to me in July, 1845, which was investigated more because I had a surgical reputation to sustain than from any particular interest in the subject. It was, of course, dismissed as incurable. Two months after this another presented, which received a like verdict. Two cases in such quick succession in a country town, at that time, formed an era in one's life; imagine my surprise, when, a few weeks after this, a gentleman called to consult me about a third case. I told him promptly that it was useless to send her to me, as the injury was wholly incurable. He suggested that there was a possibility of my being mistaken in my ready diagnosis; when I replied, that a leakage of urine following a protracted labor was an infallible sign of a vesical fistula. But my remonstrances were unavailing, for he sent her to town in spite of me.

I investigated the case thoroughly, reading every author I could find on the subject, but to no purpose, for all was darkness and confusion; and thus I was on the eve of sending her home, when a little incident occurred that formed the turning point of my professional career, and without which the

discovery that has engaged our attention to-night would not have been made.

A lady was riding in the suburbs of the city of Montgomery, Alabama, and her pony taking fright, jumped suddenly, when she fell to the ground, striking on the sacrum. I saw her soon afterwards; her sufferings were extreme, as she had rectal and vesical tenesmus from a sudden retroversion of the uterus. To replace the dislocated organ was the indication of relief. Following the teachings of learned professors, the patient (covered with a sheet) was placed on the knees with the pelvis elevated, and the thorax depressed, when by manipulation through the vagina and rectum, I hoped to replace it. Introducing the right forefinger into the vagina, but remembering how a nervous gentleman had suffered a few days before from a rectal examination, I concluded not to subject this lady to the same disagreeable operation, particularly as it seemed possible to overcome the difficulty if my finger was only a little longer. My middle finger is more than half an inch longer than the index, but it could not be used without its fellow; and thus the two were passed, and in a few seconds I could not touch the uterus, or even the walls of the vagina, and the fingers were swept around as it were "in empty nothingness," which was to me at the moment

a most puzzling mystery, and while I was endeavoring to unravel it, my patient exclaims, "Oh doctor, I am relieved!" My office was ended, for my mission was to relieve her, but how it was done I could not understand. While I stood doubting and wondering, my patient, now easy, threw herself down on her side, producing thereby a sudden escapement of air from the vagina; and thus the whole mystery of the accidental reduction of the dislocated uterus was explained on the principle of atmospheric pressure.

And what was its rationale? When the patient was in the position described, there being a natural tendency of the pelvic viscera to gravitate towards the epigastric region, it would require no great *vis a tergo* to produce the desired result in a recent case of this kind. One finger, however, was not long enough to throw the organ up, nor were the two; but when they were both introduced, in my varying manipulations and strenuous efforts, the hand was accidentally turned with its palm downwards, which thus brought the broad dorsal surface of the two parallel fingers in contact with the vulvar commissure, thereby elevating the perineum and expanding the sphincter muscle, which allowed the air to rush into the vagina under the palmar surface of the fingers, where, by its mechanical pressure of fifteen pounds to the square inch, this canal was

dilated like a balloon, and the uterus replaced by its pressure alone. This accident—THERE ARE NO ACCIDENTS IN THE PROVIDENCE OF GOD!—this incident, then, occurred just at the right time. Had it happened six months sooner, its importance would not have been duly appreciated. Had it been six days later, the golden opportunity for its practical application would have been lost forever; for my mind had been sorely perplexed by the obscurity surrounding the investigation of the cases before alluded to, and I said to myself, "If by this position the atmospheric air can be made to dilate the vagina to such an extent, even with a force strong enough to reduce a dislocated uterus, why will not the same principle allow me to explore this region, and examine accurately any injury, or disease to which it may be liable?" Full of the thought I hurried home—and the patient, (with vesico-vaginal fistula,) who was to have left on the next day, was placed in the position described, with an assistant on each side to elevate and retract the nates. I cannot, nor is it needful to describe my emotions, when the air rushed in and dilated the vagina to its greatest capacity, whereby its whole surface was seen at one view, for the first time by any mortal man.. With this sudden flash of light, with the fistulous opening seen in its proper relations, seemingly without any appreciable process of ratiocination, all the principles of the operation

were presented to my mind as clearly as at this time. And thus in a moment, in the twinkling of an eye, new hopes and new aspirations filled my soul, for a flood of dazzling light had suddenly burst upon my enraptured vision, and I saw in the distance the great and glorious triumph that awaited determined and persevering effort. From this moment my high resolve was taken; nor did I think, or care for the personal sacrifices I should have to make. I thought only of relieving the loveliest of all God's creation of one of the most loathsome maladies that can possibly befall poor human nature; and in this, I honestly confess that I was stimulated by feelings of national pride, as well as by a desire to advance our glorious profession. Full of sympathy and enthusiasm, thus all at once I found myself running headlong after the very class of sufferers that I had all my professional life most studiously avoided. Ransacking the country around, my medical brethren soon discovered and placed at my disposal, some seven or eight cases of vesico-vaginal fistula that had been quietly laid up as incurable. Building a little hospital as a special field of experiment, I readily got control of these cases, all of them healthy young negro women; promising to perform no operation that would endanger life, or render their condition any worse. Having no proper instruments, and no instrument maker, dentists, jewellers and black-

smiths were laid under contribution, and soon such rude instruments were made as were suggested by the peculiar wants of individual cases. This occupied a period from the 9th of December, 1845, to the 10th of January, 1846, when the first operation was performed.

Several medical friends, amongst whom were Drs. Boling, Holt, Ames, Baldwin, Jones, McWhorter and Henry, were invited to the inauguration of the experimental series. When the mechanical contrivances were exhibited, the peculiarities of each case pointed out, and the principles of the operation explained, they thought my plan of procedure promised well, while some were but little less enthusiastic than myself in hopes for the future.

The first was a very simple case, and one that any tyro in surgery could now cure in a week's time. The fistula was an inch and a quarter long, transverse, in the base of the bladder, with an abundance of tissue. Its edges were accurately adjusted, and I expected to effect at once a magical cure; but greatly to my surprise and mortification it was a failure. However, the size of the opening was reduced from that seen in the diagram to one not larger than a No. 4 bougie: this encouraged me considerably, and the same operation was tried on

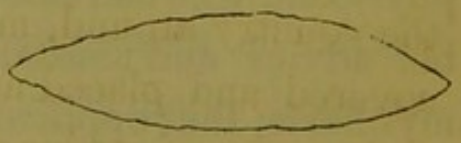

Fig. 21.

another case with a like unfortunate result, and after this, with various, and constantly varied modifications on others, till each one had suffered numerous operations, but all to no purpose. And thus I worked on, not for weeks and months, but for long weary years, before a single case was cured. My repeated failures brought a degree of anguish that I cannot now depict, even were it desirable. All my spare time was given to the development of a single idea, the seemingly visionary one of curing this sad affliction, which not unfrequently follows the fulfilment of the law pronounced by an offended God when he said to the woman, "In sorrow and suffering shalt thou bring forth children."

Soon my friends began to despair of my efforts, and one by one became tired of such profitless work. At last Dr. B. R. Jones, my partner, an accomplished physician, who had stood firmly by, giving his valuable advice and assistance, importuned me to cease my efforts; thus opposed at home, and deserted by the professional brethren who once cheered me on by their personal presence, I now stood alone—alone! did I say? no, I was not alone, for I felt that I had a mission, if not of a Divine character, at least but little short of it, of Divine origin. I felt that the God who had called me to this good work, and inspired me with new views for its accomplishment, was with me, and would not desert me. I could

not have ceased my labors if I had tried, for something told me that the fulness of time had arrived, that the work had to be done, and that if I should fall, God in his wisdom would raise up some one as an instrument to carry it forward to a glorious consummation. I was not alone then;—nor was I alone in another sense, for I had succeeded in infusing my own courage and enthusiasm into the hearts of the half dozen sufferers who looked to me for help, and implored me to repeat operations so tedious, and at that time often so painful, that none but a woman could have borne them.

To the indomitable courage of these long-suffering women, more than to any one other single circumstance, is the world indebted for the results of these persevering efforts. Had they faltered, then would woman have continued to suffer from the dreadful injuries produced by protracted parturition, and then should the broad domain of surgery not have known one of the most useful improvements that shall forever hereafter grace its annals.

In my first experiments the quilled suture was used, securing the ligatures by passing them through little canulæ that projected from the vulva.

Fig. 22, shows the rude contrivance, which was made of silver. The canulæ were firmly soldered to the proximal quill, and when the ligatures were tightened and wrapped round the end

that projected from the vagina, the fistulous edges were neatly co-apted by the quills. This is introduced merely to show the slow degrees by which practical truths are sometimes developed. After using this machine variously modified for nearly three years, giving attention mostly to the perfection of the self-retaining catheter, I at last concluded that the projecting canulæ were a chief cause of failure, and consequently determined to dispense with them: but how to secure the ligatures was the question. A detail of the numberless expedients resorted to is useless; suffice it to say, that I was at last driven completely to the wall. I had resolved never to repeat another operation till I had devised some plan of fastening the quill suture without the canulae—of tying a knot where I could not reach it with the fingers. Thus my brain was sorely puzzled; I had not performed an operation for nearly six weeks, and my devoted patients

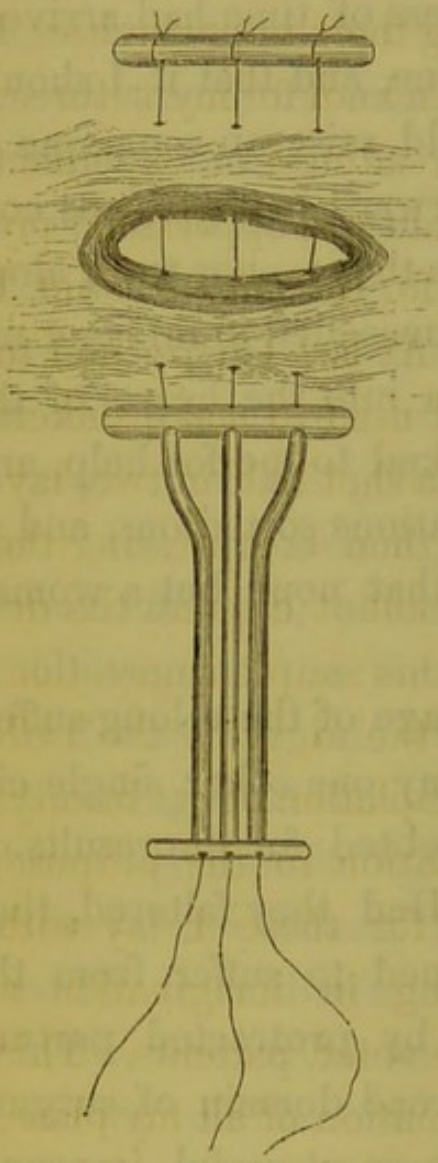

Fig. 22.

were begging me from day to day, to "try only one more time." Notwithstanding their importunities, I had determined first to invent a knot for my sutures; but it seemed that my usual readiness of expedient had now deserted me. My brain was oppressed; my heart was heavy; but never for one moment did I despair of eventual success. At last I happened to remember that, when a boy, I used to make sinkers to my fishing lines by cutting a shot half in two, laying the line in the cut, and then compressing the shot on it with my teeth. I cannot express the delight that filled my heart at this simple suggestion. The idea occurred to me on the night of the 14th November, 1848. The contemplation of its beauty, simplicity, and perfect adaptation to the purpose, gave me a sleepless night; for there I lay with etherealized brain, performing in imagination a magical cure on each of my devoted patients. This was, as I thought, the consummation of all my plans. After a struggle for three years, victory was about to crown my efforts. How I longed for the morning, that I might put to the test of experiment what seemed so beautiful in theory. But I was doomed to wait another twenty-four hours before proving my principle; for just as I was preparing for the operation, a call to the country appropriated the day, and thus the longest day of my life was lengthened out by hope deferred. But bright and early on the

succeeding morning, I applied the quill suture secured by the perforated shot. It was all I could desire—I was never so well satisfied with any operation in all my life. How anxiously I waited for its results. I had at last gotten rid of the canulæ that had so long been such a serious obstacle to success, and every thing was propitious; but these bright hopes were of short duration, for I soon had unmistakable evidence that the operation was a total failure. What was the cause of it? why, said I, it must be because the silver quills are too large; so I began to lessen their size till they were not more than a line in diameter, and on account of the expense of silver, lead was substituted: but notwithstanding these modifications, there was no more success than at the beginning. What now was to be done? The principles of the operation were clear, and its mechanism seemed to be perfect. At first I had supposed my failures were due to the imperfection of the catheter; that was perfected, and then I laid the blame on the method of securing the sutures by means of the canulæ; they were replaced by the perforated shot, and then I looked to the size of the quills, and reduced them, so that they burrowed nicely in the tissues: it then seemed that success was inevitable, but still disappointment awaited me at every turn.

Thus far all my experiments were conducted on

the principles of a rational inductive philosophy. The operation was mechanically perfect, but with no better results than when it was rude and clumsy. There must be a reason for all this—what was it? Why, said I, perhaps it is in the nature of the material more than in its principle of action; what a happy thought!—Of course it was, for a silk thread introduced under the skin, and allowed to remain a week, becomes a seton, giving rise to the suppurative process, and certainly the same thing must occoccur with it in the vagina; and how then could there be cohesive union? Here then was the difficulty at last; how strange it now seemed to me that this fact had not long ago forced itself upon my mind. Now the question arose, was there a substitute for silk that would answer the same purpose, and yet not poison the animal tissue? Why, lead remains indefinitely in the body, becomes sacculated, and produces no poisonous, or suppurative effect. Dr. Levert * of Mobile, had demonstrated the innocuousness and efficiency of leaden ligatures on the arteries in the lower animals, and Mettaûer and Dieffenbach had actually used leaden sutures in these very cases; and I had in my various experiments tried them in two cases of vesical, and one of rectal fistula, but fortunately for science, the clumsy leaden wire was unsuccessful in my hands. Was there any

* American Journal of Medical Sciences, No. VII., May, 1829.

other metal that could be substituted for lead, possessing its valuable property of harmlessness?

In this train of inquiry what would be more readily suggested to the reasoning mind than silver, gold, and platinum?* Just at this stage of affairs I happened to pick up a piece of brass wire, that had been used in a pair of old-fashioned suspenders made before the days of India rubber; it was as fine as ordinary sewing thread. I took it to a jeweller, who imitated it in silver. I was now quite as anxious to see the result of an experiment with this, as I was seven months before to see the perforated shot applied. On the 21st June, 1849, it was done. A young colored woman, who had never murmured at the preceding failures, was placed on the operating table for the thirtieth time, and the silver sutures were applied, with the leaden bars and the perforated shot. In all previous operations the urethra, in a day or two, would become red and tender, and the urine loaded with thick tenacious mucus, thus showing the inflammatory process, which was adverse to union; but after this operation, the urine remained perfectly limpid all the time, and on the eighth day the parts were perfectly healed; the suture apparatus remaining just

* All these I have used, but adopt the silver, because it is as good as gold, and cheaper.

as it was placed, with the crossbars somewhat burrowed in the vaginal tissue.

I shall not dwell upon my feelings at this time. At last I had attained what I had worked for nearly four years; and it was but a few weeks before all the cases were cured that had been the subject of experiment for so long a time. I was anxious to get a few more cases to settle some doubtful points, before publishing to the world my discovery; but unfortunately with the realization of my dreams, and in the full fruition of my most sanguine hopes, came a sad reverse. An exacting practice and the extreme mental tension of the past four years had produced a collapse, long foreseen by friends, without my consciousness of its approach. Having contracted the chronic disease of a warm climate, which is almost universally fatal, and struggled hard for more than two years, and as it seemed, hopelessly against my fate, thus seeing that death was inevitable, and fearing that I might die without the world's reaping the benefit of my labors, I determined to give my experience, crude as it was, to the profession that I loved so much. And accordingly, in Oct. 1851, my paper "On Vesico-Vaginal Fistula" was dictated, and sent to Dr. Isaac Hays, of Philadelphia, who published it in the Am. Jour. of Med. Sciences for Jan. 1852, as my last free-will offering on the altar of science. I little thought of living to see it

in print, but it has pleased an All-wise God to restore me again to health, and by a mysterious Providence to place me in your midst, where I have found nought but friends and kindness.

Mr. President, I have thus hastily sketched a truthful, unexaggerated statement of the train of circumstances, which led to results that must ever be remembered as an achievement of American Surgery. But, Sir, I feel that an apology is due this Academy, for a personal narrative, although necessary for the vindication of right and the establishment of truth.

Fellow Associates:

I have said much of Silver Sutures, showing what they have already done, and pointing out the great revolution they are to effect in all surgery; but my task would be unfinished were I not to lay before you in this connection every good work they have achieved,—indulge me then a moment longer.

In justice to the Medical Profession of this mighty Metropolis, which is truly represented by this Academy, I beg leave here to state a few facts that must necessarily become historic; and, if historic, could the occasion be more propitious than now, in this beautiful new edifice of the New York Historical Society, which was but last night dedicated

by an eloquent address from the venerable and learned Dr. Francis.

But for Silver Sutures, that noble Charity, the Woman's Hospital, would not have been called into existence.—Do you ask how this is so? Let me glance briefly at its origin.

As before remarked, driven by a seemingly inexorable fate from my Southern home and friends in search of health, repeated observations made during the summers of 1850, 1851, and 1852, showed that I could regain it in this great city—*and nowhere else*—for whether I crossed over to Brooklyn, sailed up the Sound to the "land of steady habits," roamed over the Highlands of the noble Hudson, quaffed the waters of the far-famed Saratoga, loitered by the seaside, or scaled New England's lofty mountains, it was all the same with me—but, whenever I tarried in New York, its pure soft Croton water and bracing air, would invariably banish my dread disease. Thus the law of self-preservation drove me here in spite of sectional prejudice and an innate horror of a large city. Soon after my arrival, on the 15th of October, 1853, Dr. Mott called, and gave me the first patient I ever had in New York. It was a very bad case of utero-vesico-vaginal fistula, which had been sent to him from Canajoharie.

Having read an account of Silver Sutures, he

honored me with a request to apply them in this case, which, so far as the records show, was the first of the kind ever remedied in the State of New York. This brought me frequently in contact with Dr. Mott, who encouraged and sympathized with my views on the necessity of establishing a great hospital in this city to be devoted to the treatment of the diseases peculiar to woman. He sent me to Dr. Francis, whose broad and comprehensive views greatly contributed to shaping its destiny. Dr. Francis saw at once its bearings upon the interests of humanity, the advancement of science, and the cause of Medical Education. He was its earliest advocate, its unwavering friend. To his personal influence and overpowering eloquence is due in a great measure the hold it has upon the sympathies of the community, and the confidence of the Profession—well may he be styled God-Father to the Woman's Hospital.

Dr. Horace Green, the founder of the New York Medical College, was too much interested in the cause of medical education not to see its importance, and he aided it with wise counsel and earnest effort.

Dr. Griscom, Dr. Barker, Dr. Gardner, and Dr. Reese, were amongst its earliest friends. But the first man to suggest a proper method of co-operative action was Dr. Alexander H. Stevens, who, though

little given to enthusiasm on ordinary occasions, seemed to be fired with this idea of a Woman's Hospital, and wrote a letter to Bishop Wainwright, (which is now in the possession of the Rev. Dr. Muhlenberg,) and taking a broad view of the subject, he at once said: "You are right in thinking this movement should emanate from the Medical Profession; a meeting must be called, and you must address it." But I declined, because I was unused to public speaking, and feared to endanger a good cause by a possible failure.

However, I soon discovered that I could do nothing otherwise, and was forced to adopt the suggestion of Dr. Stevens, inviting the Profession to a lecture on the subject at the Stuyvesant Institute, No. 659 Broadway, on the 18th of May, 1854.

The interest felt was manifested by a large attendance, representing every phase of the Profession. After the lecture, Dr. Delafield was called to the chair, and Dr. Beadle requested to act as secretary, when Dr. Griscom moved "That the meeting coincide to the utmost extent with the views of the lecturer of the evening," sustaining his motion ably and eloquently. He was followed successively by Drs. Gardner, Greene, Kissam, Reese, and others, when the meeting unanimously adopted the hospital movement as its own, authorizing the chairman to appoint at his leisure, a committee of ten, five lay-

men and five medical men, to organize plans for future action; Dr. Delafield was added by this meeting to the committee which it authorized him to appoint.

The selection of this committee was a matter of grave importance,—how could it be composed so as to combine all interests in the Profession into one harmonious whole? How else but by representing the cause of Medical Education? Accordingly, Dr. Stevens, from the College of Physicians and Surgeons, — Dr. Mott, from the University Medical College,—Dr. Green, from the New York Medical College, — Dr. Francis, as the Father of Obstetric Medicine in New York,—with Dr. Delafield and your Orator, comprised the medical branch of the Committee—while Mr. Peter Cooper, and Mr. Erastus C. Benedict, were the only laymen ever selected.

This endorsement by the united voice of the Profession was the quickening principle in this hospital movement; without it, there could have been no vitality—no existence.

The kindly sympathy of the Profession was shown, too, by a liberal patronage in placing at my command a large number of surgical cases, fit subjects for Silver Sutures, that were clamorous for aid. Having no place for them, and feeling the urgency of prompt action, then it was that the members of this Committee allowed me to appeal to the mothers

of our city to aid us in this good work for their suffering sisters.

The time has not arrived for a complete historiography of the Woman's Hospital, and it is not my intention here to individualize the noble band of heroic women, who, when we had been working for several months with no practical results, called a meeting of some thirty ladies in the quiet parlor of a private residence, (No. 27 St. Mark's Place,) on Saturday the 10th of February, 1855, when the "WOMAN'S HOSPITAL ASSOCIATION" was formed, which elected a Board of Managers with the following officials, viz. :—

Mrs. David Codwise, ... 1*st Directress*,
" Wm. B. Astor, ... 2*d* "
" Ogden Hoffman, ... 3*d* "
" Jacob Leroy, ... *Treasurer*,
" T. C. Doremus, ... *Assist. Treas.*
" Dr. Horace Webster, ... *Secretary.*

This Board raised funds, rented a building, No. 83 Madison Avenue, and opened the hospital on the 4th of May, 1855, electing the gentlemen as its Medical Board who had been previously appointed as a committee of organization.

Nor did they stop here; for as soon as they saw the need of more room, they joined the Medical Profession in an appeal to the Legislature for funds

and a new Charter, merging it into a State Institution, of which the present Board of lady Managers will constitute a Board of Supervisors having charge of its domestic management, while its Board of Governors, composed of New York's choicest sons, will organize it and manage its finances. And what are now its prospects for the future? With fifty-six thousand dollars in hand, with an implied understanding in our Charter to get from the State a large appropriation as soon as her financial condition will allow it, with a sympathy for its success that pervades every intelligent family in the city, and many throughout the State, and with the expectation of obtaining from the city a site valued at a hundred thousand dollars—does not the Woman's Hospital bid fair to take its place as one of the fixed institutions of the country? And who should feel prouder of this than this Academy? Although the Academy had no opportunity, as such, of moving in the matter, still the leading members of this learned body are its prominent friends. The Medical Profession have never before, in any country, shown such unity of purpose as here, in regard to this Woman's Hospital. Look for a moment at their Memorial to the Legislature last year in its behalf. It was signed by every Professor in the College of Physicians and Surgeons; by every Professor in the University Medical College; by every Pro-

fessor in the New York Medical College; by all the leading practitioners of the city to whom it was presented; by every Physician to each of our five Dispensaries; by the Surgeons and Physicians to all our other Hospitals, and when it was sent to Albany, it received the unanimous endorsement of the State Medical Society. Was ever before such union seen in the Medical Profession? Pardon me if I should call it a "Union by the first intention," effected by SILVER SUTURES.

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