

**A paper on the management of the shoulders, in examinations of the chest : including a new physical sign : read before the New York Academy of Medicine / by John W. Corson.**

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## NOTE.

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Every innovation in the Art of Healing—so linked with the most precious interests of humanity—should be subject to free and just criticism before being adopted in daily practice. For this, the author has, in some instances, presented these views to honorable and devoted members of the profession, known to him only by reputation. Their judgment must, therefore, be uninfluenced by friendly relations. By the fairest means, he is also anxious to test the question mentioned at the close.

49 EAST BROADWAY,  
NEW YORK, *March*, 1859.

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A PAPER  
ON THE  
MANAGEMENT OF THE SHOULDERS,  
IN  
EXAMINATIONS OF THE CHEST;  
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A NEW PHYSICAL SIGN:

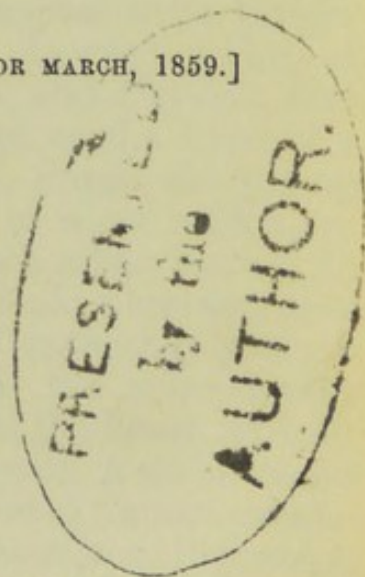
READ BEFORE THE NEW YORK ACADEMY OF MEDICINE,

BY

JOHN W. CORSON, M.D.,

*Late Physician to the Brooklyn City Hospital; Physician to the New York and Eastern  
Dispensaries; Lecturer on Diseases of the Chest.*

[FROM THE NEW YORK JOURNAL OF MEDICINE FOR MARCH, 1859.]



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ON THE

MANAGEMENT OF THE SHOULDERS

IN

EXAMINATIONS OF THE CHEST.

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THE greatest physician is he who best observes little things. This may not seem flattery, but it is truth. It was the glory of Hippocrates, Jenner, Laennec, Dieffenbach, and Physick, that each, more than others before him, pondered on the lines of a sick face, or the pustule on a dairy-maid's finger, the piping voice from a cavern of lung, the stretching of a cut tendon, or the uniting power of a seton. We excel each other, mainly, in details. Seeming trifles to the non-professional observer, may be to us the harbingers of life or death. The thready pulse, a dusky brow, just a line more of pupil; or the more distant warnings of a hard tumor, faint whizzing at the heart, an inch of dull and creaking lung, or a waxy face, with a white cloud in the urine, can each foreshadow the gravest of human events. Or, with the turbid urine, a few oily globules seen only through the microscope, may decide the fate of the patient. Indeed, the success of one of us beyond another in cure, often depends on so small a thing as a slight change in diet, or better form of the same drug. Let us not get above our sacred mission. Great things always impress. But the perfection of medical vision is that which neither magnifies nor overlooks. As trusted guardians of life itself there is really no remedy, no



the influence, no symptom, too trivial for our thoughtful attention.

We recall these familiar facts, simply in apology for presenting in this paper some new points in the diagnosis of diseases of the chest, which some may deem too nice. It is only to bespeak them fair play. Nor have we ventured to trespass on the patience of our readers, without testing most of these fancied improvements with some hundreds of cases in this department, in two large Dispensaries of our city, for more than a year past.

As is well known, different chests vary in their sounds with the thickness of their natural coverings. We test this daily. A thinly coated child, a delicate female, or a spare male, gives louder resonance and clearer respiration; while in a fleshy woman or muscular man, these signs are quite diminished. Except the spots with solid viscera beneath, those places, too, with thickest walls, are dullest. Let us search for these last. On examining carefully a human thorax, it will be found that the very tops of the lungs, so important in commencing consumption, are thus *muffled*, as it were, by the bones and muscles which fasten the arm to the trunk. In front, the clavicle is stretched like an arched fender, to keep off the ear or stethoscope. And then a little below, in muscular patients, like a flat cushion, lies the great pectoral. But the most troublesome barriers are behind. Here, nearly the whole apex of the lung is capped by the thick shoulder. The scapula, with its projecting spine and sharp edges, is so uneven, that you can scarcely get a level square inch on which to rest ear or instrument; and then it is so completely padded, with the sub-scapular, serratus, supra-spinous, infra-spinous, trapezius, rhomboid and other muscles, below, above, and all around, that the signs of auscultation and percussion are quite deadened. That careful observer, the late Dr. Swett, in his first lecture, has stated that "you gain very little by percussion posteriorly above the spine of the scapula;" that here "there is little or no resonance;" and that below this, "down to its inferior angle, and anteriorly over the pectoral muscles, the advantages of percussion are quite limited, owing to the thickness of the muscles." In front this doubtless refers to fleshy patients. There is a way to lessen these obstacles. It is a slight imitation of the droll invention of Sidney Smith, who proposed as the most perfect cooler in a hot day, to take off his flesh and sit down in his bones. The arm is used like a pump handle as a lever to stretch and diminish at certain points the flexible walls of the chest. And sometimes the hands are added as hooks to pull.



I. *Retracting the shoulders and arms as in Figure 1, by holding the left wrist with the right hand easily behind the loins, so as to thin and expose the front and sides of the chest.\**

If, facing a healthy muscular man, for example, we ask him to place one hand behind the back, while the other hangs naturally by the side, we shall find on accurately comparing the tops of the lungs by auscultation and percussion, that on the tense side the sounds are slightly clearest. This probably results from three causes. First, the *fleshy obstruction is lessened* in thickness so as to

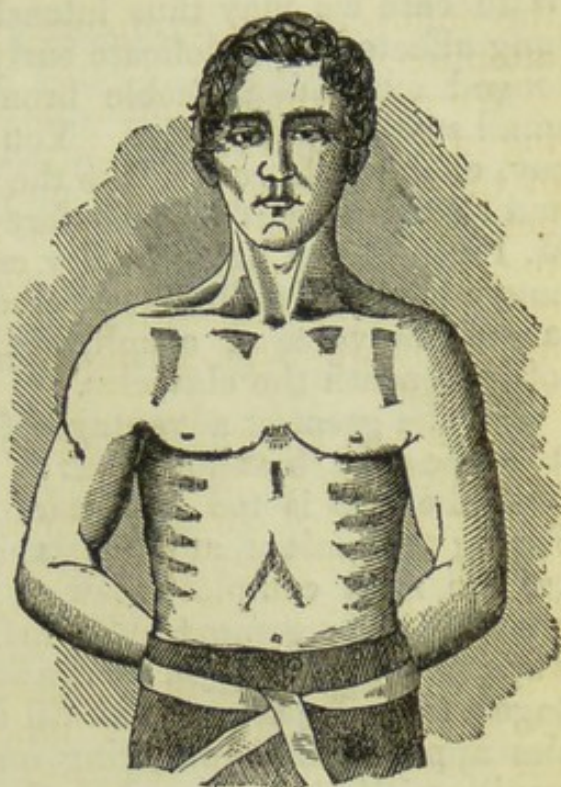


Fig. 1.

hear more plainly the soft murmur of breathing. Next, the muscular substance, thus condensed by tight stretching, like spongy lung made more dense by infiltration or inflammation, becomes actually a *better conductor of sound*. And lastly, the resonance to the tapping fingers is increased, by *tightening* the flat muscles beneath them like a drum-head. And these three simple principles apply to the whole of the movements recommended.

If our subject is further asked to place both hands behind, as described above, the tones of both lungs in front are alike elevated. This experiment in health shows how we thus obtain a higher key and better test of any variation from disease.

And this position has the additional merit of giving that perfect *symmetry* so necessary in these examinations, without the usual awkward expedient of placing the patient, like a recruit, against a wall.

In muscular subjects, too, this thinning the surface at the apex, trifling as it may seem, may aid us in deciding when there is but the first faint suspicion of consumption. Every ray is precious in the dark hour when light is first dawning.

\* The large drawings previously used in explanations at the Academy of Medicine were by our worthy friend and pupil, Dr. Howard. The present illustrations are exact copies from nature; the first from the chest of a stout youth of twenty, and the remaining five from that of a gentleman aged thirty-five; both either ambrotyped or daguerreotyped in these positions, and engraved by Redman.



With care we may thus intensify to the ear at the top of the lung affected such delicate early signs as rude respiration, prolonged expiration, feeble bronchophony, or the clicking of small scattered tubercles. You may, for a wonder, catch that coy, changeable rustle, like the folding of tissue paper, heard—and then not heard—just before tubercular softening, and which M. Fournet has named “dry crackling.”\* Or, it is easier to note a shade of dullness on percussion, or feel the least emphatic jar of the voice or cough, as the tips of the fingers are laid softly beneath the clavicles.

But the greatest advantage of this posture, is that anteriorly it is the very best for what is technically termed inspection. And the eye is too important a witness to be neglected here. Facing the patient, at the distance of two or three feet, you thus get the most complete view of the front and sides. Indeed, it is a little arrangement quite artistic. The arms are out of the way; the coat of flesh is drawn closely till it fits like a bandage; the soft parts shrink till the fine interlacing of the muscles appears, and you bring out the fainter lines, as a painter would, with his light and shade. All this helps in comparing. The least stiffness or inequality over either lung from disease is easily detected.

Again, by this pulling back of the shoulders, the hands-breadth below the clavicle, so painfully interesting in the insidious commencement of consumption, is actually enlarged. It is spread out as if for better scrutiny. At a critical period you may magnify the most important point. For here is seen the slight shrinking or flattening, or the little depressions of surface and the accompanying loss of motion, denoting the first stage or the *infiltration* of tubercles. These appearances soon become more marked. As cavities at last form in the lung beneath, the hollows outside, from a sort of *caving in*, as it were, become deeper, and the stiffness of the walls more apparent.†

At first, as is well known, the two lungs are scarcely ever alike diseased. It is usually near the fatal close that both become so permeated by tubercles, and justify the statistics of the great work of Louis. ‡ One often remains healthy or nearly so for a long time. Hence we have the important advantage of accurate comparison. On closely inspecting the two lungs

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\* *Recherches Cliniques sur l'Auscultation.*

† The scientific physician will excuse a few familiar illustrations here and there, not necessary for *him*, and intended for the younger students of the profession. Several of these who have generously aided us in the experiments and measurements of this paper may be among its readers. They represent a large class preparing for very arduous struggles and duties. For these we venture to define with a little care some points too imperfectly sketched at hurried Cliniques.

‡ *Recherches sur la Phthisie.*



above, it is easy to perceive that a sculptor, copying accurately for a bust, would have to mould and chisel a shrunk, uneven surface over the diseased lung while the healthier one would be full, round and smooth. There is also less expansion or a sort of halting in the movement of breathing over the lung most affected.

Lower down at the two sides there is secured by this plan what an artist might call a fine prospect of pleurisy. You can see every stage, from the first *hitch* in the gentle play of the ribs following the paralyzing stitch of the side involved, to the subsequent flattening of the intercostal spaces or the bulging from the effused fluid. For a rarity you may occasionally see the heart itself pushed to the right side of the sternum by hydraulic pressure—as in case No. 16 of our table—and slowly watch its gradual return as the waters subside. Lastly, you can note the invariable contraction of the side that follows the absorption and cure of empyema. With the arms thus thrown backward, the physician can readily pass the head under the axilla on either side and listen, percuss, or feel for the different signs of tubercles, pleurisy or pneumonia. It must not be forgotten, too, that in various parts of the chest the most skillful observers are occasionally puzzled with small aneurisms. It often needs almost the touch and ear of a blind man to feel their faint thrill, and hear their murmur and dullness. We not only emphasize these, but we thus get a fair field for sight. Drawing the skin, in this way, tightly against the ribs, either by a front or side view, you get a better glimpse of the least undulating tumor.

II. *Raising the shoulders and arms in the usual manner, (fig. 2), by locking the hands over the head, to examine the axillæ and spaces below them.*—This expedient is so customary in searching for tubercles, pneumonia and pleuritis in the localities mentioned, and its advantages are so well known that it is unnecessary to dwell upon them. It makes the ribs stand out more distinctly so as to mark well the intercostal spaces and show finely the indigitations of the serratus magnus with the external oblique muscle. It is mentioned in passing, merely to avoid a seeming omission.

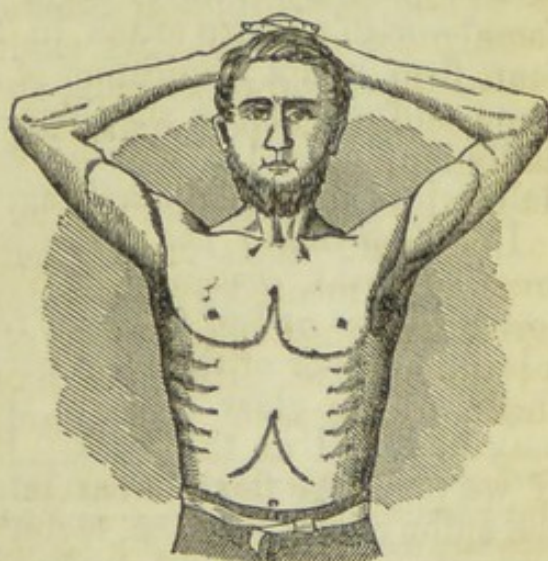


Fig. 2.



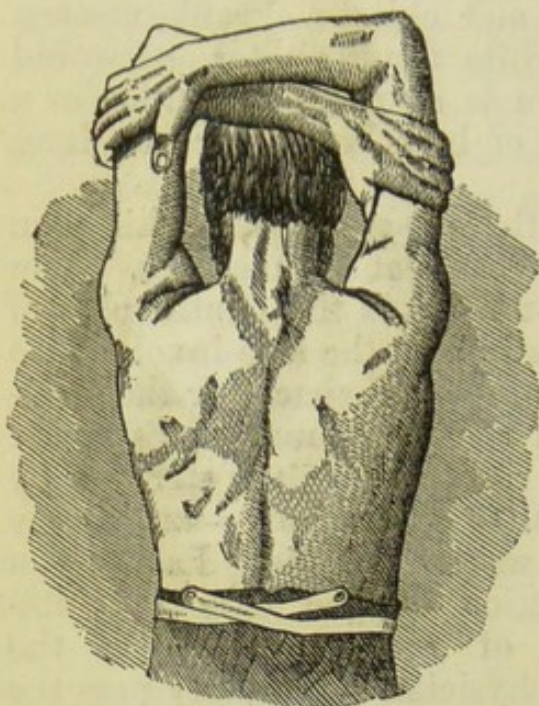


Fig. 3.

III. *Elevating the shoulders* (fig. 3) *by crossing and grasping the arms tightly behind the head so as to hoist the scapulæ to the highest point, and help uncover the lower part of the lungs at the back.*—To be candid, this showy figure has seemed the least useful of all. Yet a reference to the accompanying table of measurements, shows that by it we both separated and lifted the inferior angles of the scapulæ to the greatest possible distance. And on examining them as thus twisted round, on the living subject, it will be seen that by this means there is considerable thinning of the latissimus dorsi and lower part

of the trapezius muscles. There is a triangular space, just at the base of the lung posteriorly, where it really aids us in diagnosis. We have tested this in a few cases of pneumonia and limited pleuritic effusion low down. In justice, then, it should be placed fairly on the list. Sometimes in recovery from larger effusions it has enabled us here to trace downwards feeble returning respiration, the slowly receding dullness, or the leathery friction sounds of the drying membranes. In a recent case of pleurisy of three days' duration (No. 12 of the table of cases)—with a sharp stitch in the left side, a pulse of eighty-four, firm, and a respiration of thirty-two, a furred tongue, and some stiffness of the shoulder—by this arrangement we decidedly emphasized a *grazing sound* from a spot the size of a dollar just above the diaphragm behind.

IV. *Depressing the shoulders* (fig. 4) *by bending forward, crossing arms, grasping at the loins, holding fast, and then unbending so as best to expose the apex of the lung behind.*—In a large number of the most perplexing cases of phthisis, where there are no clear signs at the top of the lung in front, they may be found at the back. But they require careful search. If we press the flexible ear into the little uneven hollow above the spine of the scapulæ, technically known as the supra-spinous fossa, or on the round inclined plane leading to it, and wait patiently till all is still, we shall often catch the harsh blowing, or fine fatty crackling of tubercles earlier than anywhere else. On this oblique irregular surface it is a little awkward to fit a



stethoscope. This important point has been noticed by that excellent authority in diagnosis, Dr. Walshe. Below this, is a favorite haunt of early tubercular deposits. They are apt to *burrow*, as it were, beneath the top of the shoulder. Small groups may sometimes be heard here *as if two little pieces of leather lay imbedded one above another in the top of the lung, besmeared with butter between, and creaked with a faint fatty sound to and fro with the breathing.*

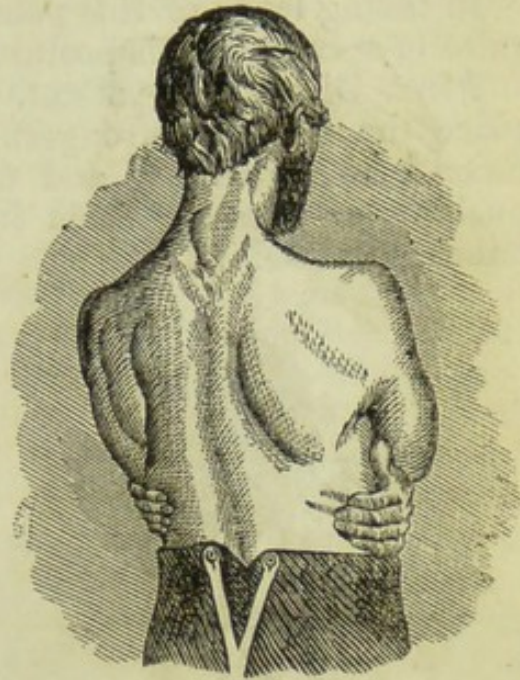


Fig. 4.

It was early an object in these investigations, to improve our means of access to this too-much neglected spot. After many experiments in what a humorous friend calls "Bodily Contortions"—somewhat after the style of the statue of Laocoön—we hit upon the above, as the best. We wish it were better; yet, if it shall lead to more care here, it will not be in vain. The measurements of our table, prove that it slides downwards the shoulders more than any other process. The next position we shall mention, separates them as widely at the top, but fails in depressing them, and is also open to the objection of raising a fold of the trapezius along the edge of the lesser rhomboid, like that of a blanket towards the end, when stretched in the middle. This ridge on either side, meets in the centre, at the spinal column above, and forms an arch like the top of a gothic window. By the present process, however, it is leveled. Sliding off the irregular thick scapulæ in this way you flatten down the anterior edge of the trapezius, and all about the line of the levator anguli scapulæ, there is a smooth, comfortable bed for the ear. You are thus considerably nearer the very top of the lung. Of course the sounds are louder. At the highest point, we have recently detected in a small cavity, not otherwise perceptible, the delicate "cavernulous rhonchus" of M. Hirtz. There is a painful reminiscence connected with the time of our adoption of this little contrivance. It proved our imperfections, as well as its excellence. One after another, by a sort of fatality, in our notes of the cases of several young and promising patients, we were obliged to erase "bronchitis," "throat affections," and the like, and substitute the more ominous word "phthisis," till at last we fairly dreaded to apply the new test.



In taking leave of this point, it may be well to mention two rules of service in this posture :

*First.* Direct the patient, in crossing his arms, always to place the right or strongest arm outside, to hold on better. *Second.* In separating and fixing the shoulders, aid him by pushing or pressing them in the right direction with your hands, from behind.

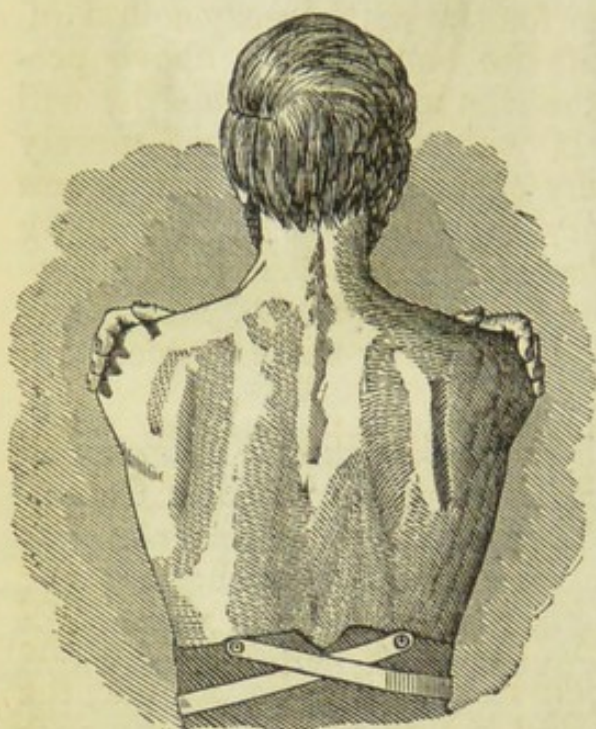


Fig. 5.

V. *Separating the shoulders to the utmost (fig. 5), by crossing arms, grasping the shoulder-joints, with the hands pulling strongly, and holding fast, to uncover the lungs behind.*

This is worth all our other suggestions put together. It would seem incredible that so simple an expedient should help us so much. On inspecting a muscular patient, it will be seen, that in the easy position, the trapezius and rhomboid muscles form two rather thick rolls of flesh between the spinal column and the scapulæ. They differ con-

siderably in delicate or stout persons. You will find them thin and easily stretched in the slender clerk, and thick and resisting in the powerful cooper or blacksmith. By the above process, however, they are often flattened out like buckskin. And this is done by machinery, which, like the human hand, is of divine contrivance. The ribs are the fulcra, the shoulder-blades and arm-pits the jointed levers, the fore-arms and hands, the ropes, the cushion-like deltoids the pulleys, and the fingers the tenter-hooks, which slide off the shoulders, and stretch the muscles between them across the back, till, in slender subjects, they seem scarcely thicker than stout broadcloth.

In the above engraving, which is an exact portrait, the two lines of shadow actually form hollows at the edges, or the *inner boundaries* of the two severed scapulæ towards the spine. The subject possessed rather greater power of separating the shoulder-blades than usual, but not so great as some others. An approach to an average will be found by consulting the statement of measurements.

But you must try it on a patient to find its full convenience.



Instead of bony edges and bundles of flesh, there is a wide smooth bed for ear or instrument to range up and down the whole length of the scapulæ. One gets very close to ribs and lungs. The sounds are at once exaggerated. Even in health, and through ordinary clothing, you can readily detect the change. Any physician can easily test this matter. Let him seize the first obliging friend he may chance to meet quietly in his room. Let his learned head rest on the edge of the shoulder-blade awhile, and listen for the soft breezy sound of the breath within; and then shift the bone by the above process, and let his ear lay flat on the ribs in its place, and he will notice a material difference. It will be found that merely sliding away the bone and fleshy obstacles here, often seems nearly to double the respiratory murmur. It is like going from the faint breathing of diseased lung, to the loud "puerile," or, as Andral terms it, the "*supplementary*" respiration of the opposite healthy lung.\* In this way there is opened a new and important field.

One object of this paper is, in chest examinations, to direct more general attention to the shoulders. The precautions sometimes incidentally mentioned, of bending forwards, loosely crossing the arms, and the like, though but half measures, are still useful. But even these are too often forgotten. A decided advantage of the new method is, that it increases behind the range both of palpation and percussion. In the former, the jar or "fremitus" of the voice and cough, more distinct over the denser lung, is thus made quite plain, on feeling carefully with the tips of the fingers, and shutting the eyes. Percussion here, it is true, sounds somewhat tympanitic from the tight stretching, but it is far better than the little or nothing by the old method. The *relative* dullness, too, is the same. And you soon become accustomed to the slight modification of sound. You will also thus get very distinctly the "sense of resistance" to the tapping fingers over the denser lung. Sometimes, by percussing carefully along the former bed of the scapulæ, we get slight dullness, even from small nests of tubercles. Of this we have seen many examples. In the case of a young man recently examined, there was only the least shrinking to the eye, and wavy and rude respiration to the ear, under the right clavicle in front; but on turning him round, throwing off his shoulders, and percussing gently with one finger, as for lobular pneumonia in a child, about the centre of the scapular bed, we could, by its dullness, bound a little nodule of tubercular deposit. There is an interesting case now under treatment. A printer, greatly emaciated, and sentenced to phthisis for

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\* Clinique Médicale.



many months previous to coming under our care, is rapidly regaining his flesh. He has half absorbed pleuritic effusion of the left side with an apparent anomaly along the edge of the left scapula above. It is a *tympanitic resonance* to the fingers, contrasting with the dullness just below, as described by those accurate observers Dr. Williams, M. Henri Roger, and Dr. Flint.\* By thus uncapping the lungs behind, there is a special emphasis given to the vocal signs. In a case of pneumonia of the right lung, now convalescent, in Brooklyn, with the claret flush, quick breathing, rusty, sticky sputa, crepitant râle and dullness, we found that higher up and more plainly than usual; we could hear, by this means, the *ring* of "bronchial respiration" and "bronchophony," like the echo of *breathing or speaking in a wet barrel*.

It is particularly convenient, too, in pleurisy, in finding the shaky voice or "egophony of Laennec, and thus determining the "line between wind and water." We have a case in point. In a patient with very large effusion in his right side, now slowly recovering, it has enabled us, for many days, more easily than ever before, to trace with a pencil this line of trembling voice as it has receded, with the subsiding fluid from the level of the spinous process, till it has gradually ceased near the inferior angle.

At the middle of that most affected, and partly covered by the scapula, we get the very best point for comparing the respiration of the two lungs. There can scarcely be the least fragment of tubercle above but it will roughen, obstruct, or deaden the breathing here.

We may be reminded, too, that before they are heard either in front or above, we get usually in this fruitful locality behind, the first *sibilant or mucous* râles of bronchitis. They commence in the smaller tubes. And here we must gently protest against the too sweeping destruction of the nice distinctions of Laennec by Skoda.† Yet we would not detract from the profound and original observations of one who has been termed by his admiring countrymen, the German Laennec. Different observers, like theologians, may believe in the same thing under different names. We admire the simple nomenclature of Latham, arranging the family of rhonchi into large, and small, "*crepitation*." But we recognize as too useful to be forgotten the more general classification of the dry bronchial râles into sonorous and sibilant; and the moist into large mucous, mucous, submucous, and subcrepitant. With a little vivid

\* *Archives Générales de Médecine ; Physical Exploration, etc.*

† *Abhandlung über Auskultation und Perkussion.*



imagination, too, we fancy we can guess at the *size* of the bubbles of the four last. They can be ranged as a sportsman would buck, duck, pigeon and snipe shot.

These better facilities for uncovering the finer tubes posteriorly, have enabled us to add to the various signs of bronchitis still another. It is a kind of *prolonged, loud, liquid breathing*, as if through a layer of wet sponge. We suppose it to be caused by a very slight increase of secretion, on the principle of the fresher notes from a wetted flute. It is heard either before or after the period of mucous râles, usually about the middle of the lung behind. We have ventured to call it *moist respiration*. We have found in a few cases that it has been useful in making slightly clearer a single sign of disease of the heart. It was discovered we believe by a talented pupil of Skoda, the lamented Zehetmayer, whom some of our Vienna friends, now our worthy professional neighbors, will well remember. We speak from memory, as his work is, for the moment, out of print.\* He found that the murmur of mitral regurgitation, beyond any other sound of the heart, could be often heard quite through the left lung at the inferior angle of the scapula. Hence, this has become one of the recognized symptoms of this affection.

We close our remarks on this important position, by repeating the cautions given with the last. The right or stronger arm should be folded outside. You must carefully aid the patient to *adjust* the shoulders widely apart; for there is often an awkward kind of shrugging upwards at first. You must help by standing at his back, and pressing on them very firmly downwards with both your hands, so as to slide them over the larger swell of the ribs towards the middle of the chest. And then you may help fix them by passing your hands from behind to his arm-pits, and *pushing* with each thumb against the posterior edges of his spreading shoulder blades.

VI. *Dropping the arms motionless by the side (fig. 6), and breathing deeply, to show behind any stiffness of either shoulder, from disease of the lung, on "taking sight" across, or measuring with eye and fingers the vibrations both of the acromion processes and inferior angles.*

From a large number of observations, we have arrived at the general rule, that *on comparing the rise and fall of the shoulders behind, in strong breathing, there is loss of motion over the lung most diseased*. We think this merits the dignity of a new physical sign. That it has

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\* Die Herzkrankheiten.



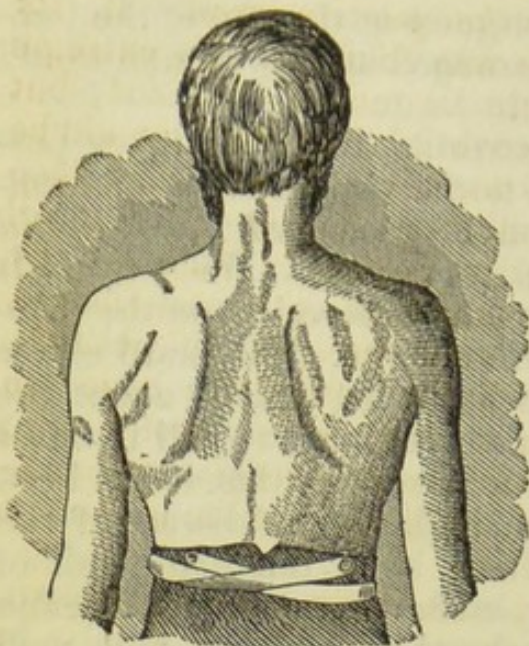


Fig. 6.

escaped the notice of so many eminent observers, has probably been from overlooking the necessary delicate tests. It seems very simple when once it is known. You have only to place the patient, with his back to you, a yard distant between you and a window, or white wall, and tell him to drop his arms by his sides, "as if they were dead," and breathe forcibly for a minute, "as if a little out of breath." By taking a range across the tops of the shoulders, like a rifleman, you readily detect the slightest

difference as they vibrate up and down. There is another gauge. If you draw nearer, and let the eye rest on the tips of the shoulder blades below, or technically the "inferior angles," you will find that they gently play with the movement of full breathing, like the fins of a fish. There is still an elegant device in our aid here. If we separate the two index fingers, and let them rest lightly as pointers on these two angles, we shall make their gently gliding motion more apparent, and thus detect the least halt on either side, even through a lady's clothing as she sighs. The movement is not only seen, but *felt*. By a new application, palpation becomes the auxiliary of inspection. The sense of feeling, if rightly used, can also help our sight at the highest point above mentioned. We may imitate the delicate touch of the blind, by shutting our eyes as we lay the sensitive pulps of our fingers on the acromion processes, and feel even a shade of difference in the upward sighing swell of the shoulders.

The patient may possibly be a little awkward at first, and need a few moments' practice. In right-handed persons, too, as is well known, the whole favorite extremity excels the other slightly in size and strength. We have found that in health the right shoulder has usually a shade more of motion in violent respiration. And in accurately comparing, just as in measuring with the tape, the two sides, for bulging or contraction in pleurisy, we must make a little allowance on the right side for this natural excess.

Curiously enough, there is considerable variation in the relative stiffness of the top of the shoulder and the inferior angle of the scapula below, in different cases. In several instances,



this has appeared to depend on the *location* of the disease. *It seemed to paralyze, as it were, the parts nearest.* If, for example, a small bed of tubercles was found at the extreme apex of the lung, the stiffness would be mostly *acromial*; but if they happened to be near the middle of the lung, it would be more angular. When the lesion was limited and very deep or low down, the shoulder would be but slightly or not at all affected. The loss of motion was considerably increased by duration. Recent cases of pneumonia made the least change. The greatest variation occurred in the progress of phthisis. Very slight tubercular infiltration would sometimes lessen to the watchful eye the upward rising of the shoulder, posteriorly; but as softening, cavities, contractions, and adhesions successively followed, the halt in its movement became more and more apparent.

Most of the physical signs, as Dr. Addison has ably shown, have occasional exceptions and anomalies.\* But, especially in phthisis, we have found this as reliable as the majority. In our experience, it has been a much more constant symptom of this disease, than any other sign discovered within the last fifteen years—more uniform than the red margin of the gums, or “festooning,” presented by that distinguished observer, Dr. Theophilus Thompson.† And, after all, it is only by the careful summing up of all the evidence, rational and physical, that we are justified in a conclusion.

In large pleuritic effusion, of considerable duration, there seemed the most powerful combination of agencies to fix and paralyze the shoulder. Here the stiffness was most complete.

Were it possible, with Dr. Hutchison's spirometer, to measure the “vital capacity” of both lungs *separately*, the loss would be on the diseased side. The passive shoulders rise and fall in strong breathing just like two weights hung on two pairs of bellows, moving together side by side. If one only is a little spoiled it will not inflate so much, and the weight upon it will not rise so high as the other. This motion, then, is mainly from the alternate filling and emptying of the lungs beneath. If bronchial tubes are obliterated, if tubercles, hepatisation or effusion encroach upon the spongy lung, there must be less expansion upward. To this principal cause we may add auxiliaries. There are the stiffening of the walls from pleuritic adhesions; the partial paralysis of the thoracic muscles from the tenderness so often present; and, lastly, the increased weight of many morbid deposits.

We subjoin a table of cases in which the shoulders became thus fixed by disease, with some of the other symptoms.

\* Guy's Hospital Reports.

† Lectures on Consumption.



*A table of eighteen cases of Chest Diseases, in which Stiffness of the Shoulder on forcible breathing was seen from behind*

No. Occupation and Age.	Disease and duration.	Some other Signs or Symptoms.	Lung most affected and probable Lesion.	Shoulder, Stiffness and Remarks.
1 Book-binder 27	Phthisis 10 Months.	<i>Right lung: top, front and rear, prolonged expiration. Left lung: front, for two inches below clavicle, depression, dullness and fatty crackling. Rear top, fatty crackling, with shoulders separated, vocal and tussive fremitus.</i>	<i>Left lung, softening, tubercles at apex.</i>	<i>Left shoulder, decided stiffness.</i>
2 Tailor 37	Phthisis 2 yrs and 9 months.	<i>Right lung: healthy. Left lung: front, below clavicle, depression, stiffness, dullness, cracked metal sound, cavernous respiration; pectoriloquy, jar of voice and cough. Rear, wavy respiration. No. 4 gave more distinct cavernous respiration.</i>	<i>Left lung, cavity beneath c'ntr of clavicle</i>	<i>Left shoulder, decided stiffness.</i>
3 Laborer 36	Phthisis 8 months.	<i>Left lung: healthy. Right lung: front, below clavicle, stiffness, shrinking, dullness, prolonged respiration; faint fatty crackling, bronchophony, stronger vocal and tussive fremitus. Rear, faint fatty crackling. Dullness with No. 5.</i>	<i>Right lung, softening, scattered tubercles at apex.</i>	<i>Right shoulder, slight stiffness.</i>
4 Laborer 36	Pleurisy 5 weeks.	<i>Left lung: healthy. Right lung: side, intercostal spaces flat; some bulging, decided dullness and resistance, friction sound at the nipple. Rear, dullness, friction sound at the inferior angle of scapula.</i>	<i>Right lung, receding effusion.</i>	<i>Right shoulder, decided stiffness, most at angle felt and seen.</i>
5 Tailor 40	Phthisis 9 months.	<i>Left lung: healthy. Right lung: front, below clavicle, stiff, hollowed, dull, resisting; respiration harsh, suppressed. Back, dull, with No. 5 fatty crackling extending to rear inferior angle; tussive fremitus.</i>	<i>Right lung, tubercles behind near the middle.</i>	<i>Right shoulder, slight acromial, decided angular stiffness.</i>
6 Porter 27	Pleurisy 12 days.	<i>Tongue with white fur; appetite poor; pulse 120; sharp, respiration 28; measurement, right 18 inches, left 17½ inches (has had old left pleurisy). Right lung: healthy. Left lung: front and side, ribs stiff below nipple, flat, bulging, dull. Egophony.</i>	<i>Left lung, pleuritic effusion to nipple and inferior angle.</i>	<i>Left shoulder, stiffness more angularless acromial seen and felt.</i>
7 Laborer 32	Phthisis 3 months.	<i>Right lung: healthy; puerile respiration. Left lung: front below clavicle, stiff, shrunk, dull, resisting; respiration blowing; moist fatty crackling. Rear, some fatty crackling down to middle of lung.</i>	<i>Left lung, apex extensive softening, tubercles.</i>	<i>Left shoulder, decided stiffness, both acromial and angular.</i>



No. Occup'tion and Age.	Disease and duration.	Some other Signs or Symptoms.	Lung most affected and probable Lesion.	Shoulder, Stiffness and Remarks.
8 Clerk 23	Chronic pleurisy empyema 21 months.	<i>Tongue</i> clean, appetite fair. <i>Pulse</i> 96; <i>respiration</i> 26. <i>Right lung</i> : healthy; puerile respiration. Measurement, <i>right</i> 16½ inches, <i>left</i> 17 inches. <i>Left lung</i> : front and side flat, bulging, stiff, dull, resisting; abscess from former operation. <i>Rear</i> , low down, flat, dull.	<i>Left lung</i> , pleuritic effusion to nipple and inferior angle.	<i>Left shoulder</i> , very decided general stiffness, seen and felt.
9 Clerk 20	Phthisis 3 months.	<i>Left lung</i> : nearly healthy; only slight bronchial sibilus. <i>Right lung</i> : front below clavicle, dull, resisting, bronchophony; faint fatty crackling to 3 inches below; vocal and tussive fremitus. <i>Back</i> , apex dull, fatty crackling, fremitus.	<i>Right lung</i> , softening tubercles 3 inches down.	<i>Left shoulder</i> , decided stiffness, more acromial, seen and felt.
10 Errand-boy 15	Phthisis 3 years.	<i>Right lung</i> : healthy; puerile respiration. <i>Left lung</i> : front, below clavicle, stiff, shrunk, dull, resisting; fatty crackling for 2 inches down; bronchophony; heart sounds transmitted; vocal and tussive fremitus. <i>Rear top</i> , dull, fatty crackling.	<i>Left lung</i> , softening tubercles 2 inches down.	<i>Left shoulder</i> , slight stiffness, more acromial, seen and felt.
11 Cooper 19	Phthisis 2 years.	<i>Right lung</i> : nearly healthy, wavy respiration. <i>Left lung</i> : front top, slight depression and dullness, jerking respiration; faint, fatty crackling for 2 inches below clavicle. <i>Rear</i> , faint crackling above.	<i>Left lung</i> , softening tubercles lowest behind.	<i>Left shoulder</i> , quite stiffened seen and felt.
12 Peddler 24	Pleurisy 3 days.	<i>Pulse</i> 84; firm respiration 32; tongue whitish. <i>Right lung</i> , healthy. <i>Left lung</i> : stitch in side. <i>Rear</i> , shade of dullness, bronchophony, grazing sound the size of a dollar at base.	<i>Left lung</i> , roughening membrane, "Dry pleurisy" behind	<i>Left shoulder</i> stiffness slight, most angular, seen and felt.
13 Boat builder 38	Pneumonia 4 days.	<i>Face</i> dusky, claret-flush; tongue whitish fur; urine small, high colored; pulse 116, full; respiration 32; sputa rusty, tenacious; cough severe; pain at right nipple. <i>Left lung</i> : healthy. <i>Right lung</i> : front, base dull, resisting. <i>Rear</i> middle, bronchophony, bronchial breathing, crepitant râle; base dull.	<i>Right lung</i> , hepatization.	<i>Right shoulder</i> , slight stiffness.
14 Laborer 25	Pleuropneumonia 3 weeks.	<i>Pulse</i> 90; full; respiration 28; sputa viscid, whitish, tongue cleaning. <i>Left lung</i> : healthy; free puerile respiration. <i>Right lung</i> : side stiff, less furrowed; respiration absent. bronchophony, dullness, resistance, <i>Rear</i> : base dull, sub mucous râles.	<i>Right lung</i> , pneumonic hepatization, some effusion.	<i>Right shoulder</i> , moderate stiffness
15 Widow 40	Phthisis 17 months.	<i>Left lung</i> : healthy, puerile respiration. <i>Right lung</i> : front, below clavicle for 2 inches, shrinking, hollowing stiffness, dullness, resistance, moist fatty crackling, bronchophony, vocal and tussive fremitus. <i>Rear</i> , from apex to inferior angle slight dullness (No. 4) fatty crackling fremitus.	<i>Right lung</i> , softening tubercles at apex, farthest down behind.	<i>Right shoulder</i> , decided stiffness both seen and felt, both acromial and angular.



No. Occupation and Age.	Disease and duration.	Some other Signs or Symptoms.	Lung most affected and probable Lesion.	Shoulder Stiffness and Remarks.
16 Police-man	Empyema uncertain.	<i>Pulse 116; respiration 32; tongue clean; measurement: right, 17 inches, left, 18 inches. Right lung: healthy, puerile respiration. Left lung: roundly bulging at left nipple; side flattened intercostals, stiffness, complete dullness of whole lung; respiration silent; heart pushed to right of sternum, near the nipple.</i>	<i>Left lung, very large, pleuritic effusion.</i>	<i>Left shoulder, complete stiffness, acromial and angular.</i>
17 Peddler 29	Phthisis 18 months.	<i>Right lung: healthy. Left lung: front, below clavicle for 2 inches, shrinking, flattening, slight dullness, resistance; fatty crackling, tussive fremitus; voice whispering, broken, coarse. Rear, harsh respiration, wavy, weak below.</i>	<i>Left lung, small softening tubercles high up.</i>	<i>Left shoulder, decided stiffness, more acromial, seen and felt.</i>
18 Unmarried 21	Phthisis 7 months.	<i>Right lung: nearly healthy, respiration rather rude. Left lung: front, below clavicle, flat, shrunk, hollow near centre, quite stiff; distinct cracked metal sound; dull around, resistant; amphoric respiration; pectoriloquy, fatty crackling around cavity, heart sounds transmitted. Rear, top, faint crackling; wavy respiration dull, fremitus.</i>	<i>Left lung, cavity beneath centre of clavicle.</i>	<i>Left shoulder, marked stiffness, more acromial, felt and seen.</i>

It will be perceived that in this table it was not deemed essential to crowd in all the particulars. Only in a few more acute cases, for instance, were the "rational signs" given.

From our rejecting a list of earlier cases, in which we had not noticed specially the features of "acromial" or "angular" stiffness, there is an accidental predominance of males. Only two cases, No. 15 and No. 18, were females. This happened from the fact, that our service on the male side of the house, in "diseases of the chest," in our largest Dispensary in the city, afforded a more ready supply from this class. It rather does injustice to the sign itself. For we have long observed that stiffness of the shoulder, from diseases of the lung beneath, is more readily detected, and is less apt to be disturbed by powerful muscular action in females and delicate males than in the more robust. The patients happened to be all right-handed.

This table might be indefinitely extended. For, with care, the sign may be found, perhaps, in ninety-five out of a hundred cases of phthisis, pleurisy, and pneumonia. In bronchitis, involving pretty equally both lungs, we would not, of course,



expect to find a feature which depends entirely on the principle of the comparison of a diseased with a more healthy lung. Those who have not the leisure to study the whole, will catch its most interesting points by running the eye over the two last columns.

We have a few more statistics. Whenever it can be fairly done, even in a slight degree, it seems desirable to bring the calm certainty of mathematics to the aid of medicine. Without teasing the reader with too long an array of figures, we may here give some measurements of ten male subjects, mainly illustrating positions Nos. 3, 4, and 5. In a matter not of vital importance, it did not seem right to trespass on the kindness of sensitive females. Yet, to make the calculations approach more nearly to the uniform standard for both sexes, a class of males rather below the ordinary size was selected. There was considerable variation in the distance which individuals alike in figure could separate the shoulders.

Of course, this statement is only a fair approximation. A little stretching, more or less, by other observers might slightly increase or diminish these numbers. And if great accuracy were really required, a much larger table of both sexes would be necessary.

STATEMENT OF AVERAGE DISTANCES BETWEEN CERTAIN POINTS OF THE BACK IN TEN MALES, RANGING AT ABOUT FIVE FEET EIGHT INCHES IN HEIGHT.

*Transversely between the superior angles of the scapula.*—Position No. 5, or widely separated, 7.38 inches; No. 6, or "easy," 5.19 inches; gain 2.19 inches; No. 4, or with shoulders depressed, 6.77 inches; gain by No. 5, 0.61.

*Transversely between the inferior angles of the scapula.*—No. 5, or widely separated, 8.91 inches; No. 6, or "easy," 6.01 inches; gain 2.90 inches.

*Obliquely from the vertebra prominens of the neck to the superior angle of the scapula.*—No. 4, or "depressed" position, 4.53 inches; No. 6, or "easy," 3.67 inches; gain 0.86 inches.

*Obliquely from the spinous process of the lowest lumbar vertebra to the inferior angle of the scapula.*—No. 3, or high elevation of shoulders, 12.04; No. 6, or "easy," 10.34; gain, 1.70 inches.

Decided as the advantage of these various stretching processes is thus proved to be in theory, the above figures hardly do justice to the matter in practice. It requires actual experiment. The advantage between placing the ear or instrument on a round, thick muscle an inch wide, and a flat thin one, of



two inches wide, can hardly be measured by a mere mathematician so well as by a physician.

In conclusion, to the professional friends who have publicly or privately, doubtless in good faith, questioned the *originality* of these plans, we have with equal courtesy, just a word of reply. When they will point to the passages fairly describing them, possibly overlooked in our review, we will gladly make honorable restitution. The "second position" was admitted to be common from the first. In adopting all the rest, we must still believe we have been copying no other physician. We have searched for them in vain, in all the authorities within our reach, down to one of the most recent, that of Wintrich, in the excellent series of Virchow.\*

But the question of their origin is really insignificant, compared with that of their *usefulness*. Here we have tried them too faithfully to be mistaken.

The most reliable of all the physical signs in "exclusion," and the most certain proof of healthy lungs, is a *pure symmetrical RESPIRATORY murmur* heard throughout their entire texture. Even in the most hurried examinations, there are four points alone where this welcome, soft, breezy sound—neither too faint nor too harsh—can usually decide the question. On these we instinctively first place our ears. In lectures to students, we have informally described them by a highly figurative expression convenient to remember, as the "Four corners of the chest." They are the handsbreadth *below* the two clavicles on each side in front; and the same spaces *above* the inferior angles of the two scapula behind. On carefully experimenting with the new "positions," here recommended, it will be found that they aid us most in these important localities.

Again, from infancy to old age, the unfavorable result of measles, small pox, and typhus, and other fevers, is very often decided by the occurrence of pulmonary inflammations. Adding these complications to the formidable list of diseases of the chest already described, it seems probable that the simple facilities here offered, may throw more or less light upon *one-third of the fatal maladies around us*.

The most destructive of all these is consumption. It more than decimates, in their prime, all ranks and conditions. The sweetest consolation of these labors, is the thought that they may be most useful in warning us earlier of this most stealthy of diseases. Our dearest hopes centre here. Its terrible importance may excuse our repeating an oft-told tale. It may

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\* Krankheiten der Respirations Organe.



serve the younger students of the profession ; and even with the most intelligent practitioner, the strongest point in the argument rests upon the familiar facts we are about to mention.

Grave physicians themselves sometimes see only the darker side of this question. They look placid before patients, but tell us in confidence we can do nothing but soothe. Those "new lights," the "physical signs," they say, are often fallacious. And finally, they ask despondingly : "Of what use is nice diagnosis or curative treatment, when the disease is so surely fatal?"

One by one, let us briefly weigh these questions. Human life, in medicine as in law, demands that we shall fairly sum up the evidence. We hope to prove that here, as elsewhere, "knowledge is power." Let us suppose that before you, on trial, is a suspected consumptive. On scanning your subject, from one to many well-known marks may be wanting. But there may be either a slender form with a narrow chest or features, ashy, pale and homely, or perchance chiselled and colored, as in waxen beauty ; lustrous eyes, with long lashes ; hair silken or dry, and generally thin ; teeth white and frail, and possibly festooned with a red line at the gums ; long lean fingers, with nails hooked forward ; or occasionally a neck seamed with the scars of scrofulous childhood. *All these, in nature's language, mean simply a feeble organization.* And this, we know, may be either inherited or acquired. Many or few near relatives may have died in the same way. But the records of the Brompton Hospital cheer us with the proofs that the share of family taint in the mischief is not so great as some have dreamed.\* Only the weakest lambs even of a delicate flock are commonly taken. Hospital statistics tell us, too, that the males even of these consumptive families, by freer exercise in the open air, have two chances to escape, to one of sedentary females.

But more frequently a frail, or even a good constitution, is lowered to the level of consumption by depressing influences. For the sake of a coming argument, let us study these. Now and then a complaining or dissipated subject has inhaled the insoluble dust of the knife-grinder, the stone-cutter, or the blacksmith, till weak lungs can bear it no longer. But more commonly the rich have grown dyspeptic, and the poor have starved. The hard student has overworked his brain to rob his stomach ; the merchant, in his early struggles, has devoted

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\* Eighteen per cent. of the males, and thirty-six per cent. of the females reported consumptive parents.—*Report of 1849.*



ten minutes to dinner, or forgotten it; or a thin, nervous book-keeper has for years narcotized digestion with *tobacco*. Some journeyman tailor has spent weeks of fasting, nights sitting like a Turk on his board; or an ambitious clerk, from a home of plenty in the country, has come to pine on a slender salary in a city warehouse, till, like the caged monkeys of Paris, he emaciates with tubercles. Or, like a gentle departed spirit we once knew, a rigid vegetarian, forgetting his mother's milk, his own canine teeth, and the great fact that the race in mercy pass through "*omnivorous*," from the pole to the equator—has actually wilted, like a plant, with the strange fancy, that eating flesh is the "root of all evil."

"Extremes meet." A fine lady in a splendid mansion, who neither "toils" nor "spins," but lives largely by gaslight, loses her relish, and wastes away suspiciously; while a poor widow, weakened by watching the sick departed, in a neighboring garret, at the same midnight hour, is silently acting the "song of the shirt," with a "hacking" accompaniment, till hunger is drowned in grief. Imprisonment, and sorrow, and want together tell fearfully. Early and late, in all weathers, a slender orphan girl, gliding past like a dark spectre, bashfully veiled, and too virtuous to sell soul and body for more, thus toiling for the barest decencies of better days, has lived on *bread and tea*, till a hollow cough tells she will soon enter the close, dusty work-shop no more forever.

In a word, on careful study we discover that in all its various forms, the prevailing cause of consumption is *depraved nutrition*. It is from poor chyle, converted into impoverished blood, that *within* the meshes of the lungs, according to Laennec, or *on them*, by the theory of Carswell, we have deposited the fatal sediment of tubercles. And this bad nourishment, again, may from an inherited weak frame, poor food, or no stomach to eat it, prostration from *foul or dusty air*, grief or mental depression, excessive study, sedentary confinement, or few or many of the agencies pictured above. In the name of the physic of two thousand years, can we not do something to arrest these? We can. From the "marks" enumerated and the family history, we can often fortify hereditary consumptives long in advance, and ward off threatened attacks. But, with the predisposed and all others, at the first warning, the spitting of blood, tickling cough, wasting or faint "physical signs," we must promptly reform all these abuses. It is time to bring up all our forces. Thousands thus sin against the laws of health unconsciously. *Especially will they deny a feeble appetite or trashy diet*. All the antecedents must be known, and the whole life regulated.



Dust, foul air, killing study, pining grief, domestic imprisonment, bolting, tobacco, and starvation must in mercy be promptly forbidden. The two great elements to be secured are, *generous food and fresh air*. We must get of these all we can. It must be frankly stated, that life itself may depend on good dinners, and time to eat them. At any sacrifice in other things, these should comprise, if possible, as staples;—fresh beef and mutton: as variations;—poultry, game, and other digestible delicacies, either to be followed by farinaceous articles, rich milk or *cream*, and ripe fruits instead of pastry as dessert. The best caterer is here usually the best physician. In this fearful malady, eating may often be aided by taking, for the “stomach’s sake,” those questionable luxuries in health, the purest ales and wines. But, to borrow the colloquial phrase of a friend, the greatest “*appetizer*” of all, is regular *exercise in the open air*. Yet consumptives are very sensitive to sudden changes. All must be clothed in flannels next the skin, and well shod. We must prescribe even for fine ladies high rubber boots, and umbrellas for damp days; tell them to keep dry, not to go out fasting, or remain chilled, and they may gradually defy three-fourths of the weather.

With plenty of bed-clothes, even the distant sash of a close bed-room may be lowered, half an inch at night. With the poor, or with most persons in crowded, paved cities, daily walks, lengthened with increasing strength, are an excellent substitute for riding on horseback, so serviceable in this affection. Remarkable recoveries occasionally follow sudden reforms. Pale clerks, coughing and wasting, sometimes leave St. Louis and western cities, to sleep out on the prairies, finally to hunt buffaloes, and fatten on them, and return quite restored. Nearly two hundred years ago the great Sydenham wrote quaintly: “But of all the remedies for phthisis, long and continued journeys on horseback bear the bell.” And it is mainly for their facilities for winter exercise, rather than anything specific in warm air, that we prize for these tender invalids the sunny deck, on a tropical sea voyage, the balmy shores of the milder West Indies, or the perfumed pineries of Florida. But more than we dream can be accomplished at home. Consumptive stonecutters or blacksmiths must be told, if they continue the business they will surely die. Dr. Beddoes, in the last century, wrote a book to prove, that butchers, rising early, living well, and keeping with their merchandise in cool, pure air, were remarkably exempt from this disease, and he was right. Young persons frequently can change to more healthy callings. But with the poor we must often kindly compromise. The slavish clerk or student may compensate for



confinement, by better living and longer walks night and morning.

Wonderful sacrifices will sometimes be made by patients for a frank, honest medical adviser, and for precious life. We knew a physician who wrote on the fly-leaf of his "diary" as a motto: "With the blessing of Providence, I can always afford to do right." He said it cost much study, toil, and charity, and withheld all medicines he would not take himself; but brought in return, sweet sleep and a quiet conscience, and slowly but surely, a competence. When he was young and poor, he once said to a rich lady with a train of carriages: "Ride only in rainy weather, and average a certain number of miles in a day in walking on foot, or I cannot attend you." He lived to get a present above his fees, and she lived to thank him years afterwards. We commend the deep moral of this story to all who treat consumptives. The great temptation, is to *medicate* with opiates and nauseating cough mixtures, till the feeble stomach is spoiled, and *manage* with powerful natural agencies too little. Yet we would not disparage the valuable aid of iron, delicate bitters, or the hypophosphites as tonics or correctives, or the local application of the solution of the nitrate of silver for the occasional laryngeal complications. Especially from a faithful trial of years, do we prize cod-liver oil, which, by a law in animal chemistry, seems to supply at the critical moment a needful element in the defective nutrition.\*

These remedies are all well known to the profession. Our object has been, from this rapid survey of the ground, to show a prevailing deficiency in management rather than medication. And we close this point by an appeal to those medical friends who "never succeed," whether with an energy and perseverance equal to the fearful crisis, they have searched out these causes, and enlisted all these auxiliaries?

Our space allows but a few words to the rapidly diminishing skeptics in diagnosis. Even the most ancient never question the rational signs. They doubt not, as characteristics, the cough first dry and tickling, then moist or hollow; with sputa ranging from scanty and pearly, to abundant round yellow or greyish masses, floating in clear frothy mucus; or the hæmoptysis, now but a stain, and then deluging the sufferer with blood. Nor do they deny the wandering, pectoral pains and dyspnœa; exhausting night sweats; a teasing diarrhœa towards

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\* The reader is referred for numerical, and other strong testimony in favor of this agent, to the reports and various contributions from the Brompton Hospital, for consumption, and to the works of Drs. Hughes Bennett, Walshe, Blakiston, Wood of Philadelphia, and others.



the last; and the quick evening pulse at the commencement, running gradually into the well known hectic fever, with first but a delicate blush, which, near the close of the scene, brightens like a spot of rouge on a haggard face, reminding you of the poet's strange fancy on the lips of a vain dying woman:

"And Betty give this cheek a little red."

The honest physician, equally with the faithful advocate, dares not neglect any available witnesses, in a trial for life. All must be questioned. But the physical signs as they are called, are, in fact, the most reliable of the two classes, for they depend not on mere functional derangements, nor on the varying sympathies of other organs, but upon actual changes in the structure of the lungs themselves. The post mortem explains them all.

As the chest is opened, the pleuritic adhesions and comparative collapse at the top of the lung most diseased, throw light on the stiffness, shrinking, and hollowing seen outside long before on "inspection." And then the lung, like a church organ, changes its music with every alteration inside. A fragment, with fine scattered tubercles, demonstrates how the first crowding or obstructing of the small tubes may produce "prolonged expiration," or wavy, harsh or suppressed breathing. Light spongy lung, injected with solid matter, naturally becomes more heavy, and a *better conductor* of sound. Hence, as we cut into a denser portion, thickly studded with grey or yellow tubercles, we can understand why, in life, they caused "dullness," and a sense of resistance on percussion, and why they communicated a more intense thrill of the voice of "bronchophony" to the ear, and of "fremitus" of the cough and voice to the fingers. Irregular masses of softening cheesy tubercles here and there produced the "fatty crackling." A cavity from which these same tubercles have been expelled, was a regular music box. Half filled with fluid, it caused "gurgling;" nearly or quite empty, it gave the blowing "amphoric," or less musical "cavernous" respiration; reverberating little drops or bubbles, it produced "metallic tinkling;" when its walls were struck with the mouth open, it emitted a "cracked metal;" sound, and lastly, when, with a neighboring bronchus, it formed a *speaking tube* of lung, it conveyed to the listening ear the shrill piping voice of pectoriloquy. The veriest skeptic can scarcely resist this simple lesson by nature herself in the philosophy of these sounds.

Finally, to the "*fatalists*," who believe that all must die in phthisis, and that diagnosis and treatment avail but little, we may say a word of the changes of thirty years. Men no longer



innocently cage and kill consumptives. From the crotchet of inflammation and its bleeding, antimony, and digitalis, we have gradually veered to fresh beef, fresh air, and cod-liver oil.

Again, the "cretfaction" of Rokitansky, or drying up of tubercles to shreds of chalk, amid the puckerings and scars of extinct tuberculous cavities, is discovered to be quite common in the aged. Of those ranging about seventy years, Messrs. Rogée and Boudet found that these chalky concretions occurred among the inmates at Salpêtrière in one-half. Dr. Hughes Bennett having instituted a similar series of observations in Edinburgh, estimated the proportion in those dying above forty, as from one-third to one-half. This is hopeful. The last author, in his recent lectures, gave a drawing of one of these cicatrized cavities in a man aged 55, who died of delirium tremens, and who, by generous living, had recovered from an attack of phthisis many years previous. Though death is still the sad rule, in ordinary cases, yet these exceptional cases are more and more frequently reported. Our facts may live when our theories perish. We present here the briefest synopsis of four illustrative cases, from among several less marked. They show the importance of that decision and thoroughness for which we have contended.

*Case 1.—Tubercular infiltration—Recovery—Well 8 years after.*—Miss —, of New York, aged fifteen, very slender, the only child out of five, not dead of consumption, having coughed, and lost flesh for several weeks, consulted us in October, 1850, in great alarm. She had a bright, sunken eye, some fever at evening, pulse 120, and a dry, teasing cough. Beneath her right clavicle were slight hollowing, moderate dullness and resistance, harsh respiration, prolonged expiration and bronchophony. She was ordered to be well aired and protected walking and sleeping; to be educated to walk several miles a day, to take cod-liver oil and iron, and to live most generously. Her circumstances being easy, these directions were obeyed to the letter. In three months she was discharged greatly improved. At the time of writing, eight years after, she is reported in excellent health, having married, and become the mother of two children.

*Case 2.—Tubercular infiltration—Some throat symptoms—Well nearly three years after.*—Miss —, of New York, aged twenty-two, a delicate blonde, rather anemic, of healthy parents, applied to us in June, 1856; with a red, granular throat, tickling cough, and loss of flesh. Gradually there were developed a little later, beneath the right clavicle, stiffness, hollowing, some dullness, prolonged expiration, harsh breath-



ing, bronchophony, and distinct vocal and tussive thrill. She was liberally supplied with everything needed. Iron, nux vomica, ale, cod-liver oil, nitrate of silver, and astringent gargles to the throat, long walks and the best living having failed to relieve, she sailed in January for Enterprise, in the interior of Florida. She was a model patient, exercising and eating to her utmost, and bravely obeying orders. Long rubber boots, long rides and lively sports were practised to perfection. She soon forgot her cough in merry laughs, on the lake, and in the pine woods. Returning north in June, quite restored, she soon after married. She is now the mother of an uncommonly vigorous child, is free from cough, and enjoys better health than for years previous.

*Case 3.—Softening—Cavity—Hæmoptysis—Well nine years after.*—Charlotte —, aged eighteen, blonde, very frail looking, having just lost her father with phthisis, consulted us from Brooklyn, in February, 1850, for cough, spitting of blood, hectic, and night sweats. On examining the chest, we found distinct "fatty crackling," and other signs of softening tubercles, from a spot the size of a dollar just beneath the centre of the left scapula behind. She was ordered to change her poor living at once, to take, regularly, long walks, with iron, a few drops of tincture of nux vomica for her delicate stomach, and cod-liver oil. In a few weeks, just at the centre of the bed of tubercles, there came the cavernous breathing, and pectoriloquy of a cavity. Changing her diet to the richest food, she soon gained in flesh, and all the symptoms. She married eighteen months after. On careful examination, but a few days before writing this, there was not the crackle of a tubercle in either lung, only a little smooth blowing sound behind, over the old cavity. She was comparatively fleshy, and said she "was never so well."

*Case 4.—Cavity—"Pectoriloquy"—Hæmoptysis—Well eleven years after.*—Dr. —, aged about thirty years, pale, emaciated, and coughing—sometimes blood—was commiserated by our American friends in London, early in 1848, as fast sinking in consumption. While practising in a city near New York a suspicious cough had attracted his attention, and Dr. Watson, now the worthy president of "our Academy," had found "pectoriloquy" and a "cavity" in his lung. Drs. Swett and Clark had confirmed this. Rallying from despair, he had embarked for London, where we met him. He was still an enthusiastic student, and we could hear him cough, and see his haggard face at every hospital and medical gathering. Subsequently, he saw that eminent chest-physician, Dr. Stokes, of Dublin, who agreed with the former opinions, and urged him to keep



on the sea for a time, and live on the choicest beef and mutton, and drink the best porter. He thus voyaged across the Atlantic for several years, lost his cough, and grew very stout and ruddy. He is now perfectly well, and is a distinguished professor in the West. We are sure his kind heart will excuse this instructive history for the good of others.

And this seeming excursion, and these cases bring us back with a redoubled force to the keystone of our arch, the great question of this paper. If we can thus constantly recognize both the *causes* and *symptoms* of phthisis—if, by improved *treatment*, it is occasionally cured,—*how much greater success might we attain, if, by this system of "management of the shoulders," or any other means, we could average, say, three months earlier notice?* Time only can tell. We call for volunteers in this search. As a parting request, we ask each physician who reads this, faithfully to examine by its plans, at least **THREE FAIR CASES**, and further, to help in devising something better. The field of "diseases of the chest" is large enough for all who will aid in its cultivation. To its able representatives in our three medical colleges, and others, we feel indebted either for friendly offices, or the example of untiring zeal.

Calm and even mathematical as this discussion has been, we approach its last words with unfeigned emotion. Deducting young children, how fatal still is phthisis! From eighteen to thirty-five, says Hippocrates; from twenty-five to thirty-five, says Brompton Hospital—just the seed time of useful life—is its sad harvest. No malady so pinches the poor. None brings the pawnbroker so many warm garments from shivering woman, or fills his drawers with so many wedding rings, to buy the last delicacies to sustain lingering life. It is full of bitter memories to the physician. For it tells him of imploring looks answered by forced smiles with a heavy heart; of arms folded in despair, and blasted hopes. Perchance, as with us, it has struck down the noblest of kindred or friends. For it chooses the brightest and best, the gentlest lambs of every flock. And the lessons of triumphant faith, the smiles on pallid lips, the dying counsels, and looks of love they gave, made us but miss them the more. For they who are most ready to die are most worthy to live.

Deeply have we longed to throw a single ray across this gloomy path. It will be for our brethren to say if we have succeeded. We close, by assuring them of our sincere conviction based on extended trial, that these simple expedients of *thinning*, *condensing*, and *stretching* the walls of the chest, as described, *add fully one-third to our means of detecting the earliest signs of consumption.*



## SUMMARY.

1. That remembering the great value of many reputed "little things," in the science of saving life; and that the chests of *lean* persons give clearest sounds, and are best marked—we may seize this hint from nature, and increase the "physical signs," by either lessening or removing more especially those principal natural obstacles, the great pectorals in front, and the two scapulæ and their muscles behind.

2. This may be affected by using the arms as levers, and the hands as hooks to pull. The process, in each case, involves three principles—*thinning, condensing, and tightening*. It is illustrated by the simple experiment of placing one forearm of a muscular man behind his back, while the other hangs loosely by his side, when the sound, especially of percussion, will be found heightened below the clavicle of the stretched side in front.

3. That the suggestions here offered are not fanciful theories, but the results of practical observations on several hundred patients in private, and in two large Dispensaries, during the past year. The drawings, too, were copied from nature. To throw back the shoulders, and bare the whole front, we need the "*first position*." It is a repetition of the above experiment with *both* arms. *The left wrist is simply held easily with the right hand behind the loins*. This has many little advantages in obscure cases. It gives symmetry, gets rid of the arms, and fits the coat of flesh closely, like a bandage, for "*inspection*," makes it tense to increase the resonance of delicate percussion, and *conducts* better the sounds within. It thus aids in distinguishing the more difficult cases of tubercles, pleurisy, pneumonia, or aneurism.

4. That the "*second position*" is the common one of locking the hands over the head to examine the axillæ, and is mentioned to avoid omission. The *third position* crosses the arms at the back of the head, with the hands grasping near the elbows, so as to *hoist* the shoulder blades high up behind, and *thin* the muscles, to search for obscure or limited pleurisy or pneumonia low down near the diaphragm posteriorly.

5. It is very important early in suspicious cases of cough, to examine carefully the *tops of the lungs behind*. For without any distinct signs in front, consumption, often thus mistaken for a mere throat affection, begins here. A few scattered tubercles are apt to *burrow*, as it were, beneath the top of the shoulder. Here we need the "*fourth position*." For this the patient crosses arms in front, slightly stooping, *hooks* the hands at the loins, or false ribs, and then stretching upward, he holds fast to increase the tension. The physician aids from behind, by pressing down firmly the shoulders. They are thus *slid off*, the muscles are smoothed down, and the ear, coming closer upon the top of the lung, hears better the sounds.

6. *As worth more than all the rest*, we commend the "*fifth position*," for by natural machinery it wrenches the shoulders forward *out of their beds*, and widely severs them in the rear. In thin persons it often thus stretches out their intervening muscles till like stout broadcloth, and thus quite uncovers the inner and upper part of the lungs behind. To accomplish this, the patient crosses arms in front, with the stronger outside, grasps with the opposite hands the *two shoulder joints*, pulls both strongly, and holds fast, to keep them tense. The physician aids to fix the shoulder blades widely apart at the back by firmly pushing. Even in health, as any one can prove, the soft breathing murmur at the former place of the scapula can be thus nearly doubled. In tubercles it here opens a new field for *palpation*, and especially for *percussion*. It intensifies harsh respiration, or "*fatty crackling*." In pneumonia, it exaggerates the clear, barrel-like echo of "*bronchophony*," and in pleurisy that line between wind and water, the trembling "*egophony*." It brings out a delicate *new sign*, we have discovered, in bronchitis. It is a kind of prolonged liquid breathing, as if through a layer of wet sponge, heard before or after mucous râles, which we venture to name *moist respiration*.

7. Another new and really useful "*physical sign*" we have to communicate, is the *comparative stiffness of the shoulder over the lung most diseased, in strong*



*breathing, seen and felt from behind.* For this we may use the "*sixth position.*" Facing the back of patient, a yard distant, near a window or white wall, you tell him to drop his arms, let them hang easily by the sides, "as if dead," and then breathe deeply for a few moments, "like a man a little out of breath." You now "take aim," like a rifleman, across the tops of the shoulders, and then shut your eyes and *feel* them gently swell. Drawing nearer, you notice that the "inferior angles" of the scapulæ move gently in breathing like the fins of a fish. You can both *see* and *feel* this movement. This *stiffness* of the shoulder in breathing may be decided, or slight, local, or general. When most at the top, we term it, for convenience, "*acromial,*" and when most at the lower extremity, or inferior angle, we call it "*angular.*" Curiously enough, these last features seem to depend on the higher or lower location of the disease which thus, as it were, *paralyzes the parts nearest.* An elegant way of testing "*angular stiffness,*" even in a lady fully clad, is to place your two index fingers on the lower points of her shoulder blades, and watch and feel their movement as she sighs. The causes of this stiffness are supposed to be *loss of upward expansion* in the lung, tenderness, pleuritic adhesions, and weight of morbid deposits. A table of eighteen cases is added, illustrative of this sign. It was least in recent attacks; varied most in phthisis; was slightest in pneumonia, and greatest in chronic pleurisy.

8. A statement of measurements of ten males, shows the gain in inches, and decimals, by "third," "fourth," or "fifth," positions respectively, between the inferior angles of the scapulæ, and the lowest lumbar vertebra; the "superior angles" and the vertebra prominens of the neck and between the two upper and two lower angles of the scapulæ. Of the whole of the six positions, the first, fourth, *fifth*, and sixth are the most frequently useful. The others apply to particular cases. Taking into account the pulmonary complications of other diseases as well as the range of "*chest disease,*" it is believed these various improvements, slight as they seem in detail, really throw light, perhaps, upon many forms of *one-third of the fatal maladies of the race.*

9. On account of its fearful importance, it is hoped they will mainly benefit *tubercular consumption.* Tracing, faithfully by various "marks," and the unhealthy habits of the patient, the agencies leading to the two prevailing causes, *feeble organization* and *depraved nutrition*—by prompt reform of abuses, generous animal food, and free exercise in the *open air*, with tonics, and *cod-liver oil*—we may do much to arrest the disease. *Occasionally we may cure.* The encouraging researches of Hughes Bennett, and Messrs. Rogée and Boudet show that from the numerous chalky concretions puckerings and cicatrices found at the tops of the lungs in very aged persons, it is probable that *about one half* have recovered from more or less tubercular deposits during their lives. Four living cases from several others are reported by the writer of arrest or cure of phthisis of several years' standing. The great question of this paper then is, *What may be the result of average notice, say three months sooner?* Time only can tell. Each physician who reads this is earnestly requested to aid by a faithful trial of this system of examinations in at least *three suitable cases.* The malady is still widely and deplorably fatal. From extensive trial, we firmly believe that, simple as they may seem, this *management of the shoulders*, these expedients for *thinning, condensing, and tightening the fleshy walls of the chest*, add *fully one third* to our power of detecting the earliest signs of consumption.