Lecture 1-- Oct. 17, '29

A postural or chronic condition is static rather than dynamic, that is the muscles tend always to contract along the same lines which caused the distortion, rather than to shift relations and lines of contraction.

Protoplasm tends to flow in the direction the intent to act has acted upon it.

If a static position causes various semi-fixed protuberances then the condition in the pelvis wld react in the thoracic structure and on either side of the spine. The spine wld be giving to compression and added conditions of shoulder and leg.

But when there are peripheral conditions which have not obviously affected spine and pelvis, then it might be a vocational condition caused by a movement rather than a ~~condition~~ position. Here finely balanced muscles may hold the axis fairly straight. In patient, (E.K.B.) the deltoid and upper horizontal fibres of the trapezius were affected. The elbows and hips were out but the head was fairly straight, showing spinal muscles were fairly even.

If there is a pain there is a cause or causes. The pain may be located at the cause or at the reactionary point or reflex. If a place is short, (short muscle or area)of tissue) there is an inhibition. Stretching only tears. Encourage it to give in the direction it is already going till it releases. Shorten to encourage action in deepest nerve and blood vessels. Do not shorten with wgt. bearing. Whole superstructure must be centered. You cannot shorted elbow till the shoulder is centered, muscle pulls evened, blood vessels released. Fascia becomes thickened by foreshortening of outside muscles. Screwing works out venous blood.

Miss Swiegard

1- Synovitis in rt leg. Very painful.
Directed to use capsolin on painful area
2- To take dose of castor oil
3- To follow this for three mornings wi a dose of salipatica.
4- To strap all around pelvis, beginning on one side of spine, wi 3in adhesive, pulling it tight across the front and slitting it across each groin to make room for movement of the leg.
5- To keep the leg up as much as possible.
6- To do the following exercise:
Lie on the left side to release the blood vessels of the femoral triangle which felt congested. There were lymph nodes (enlarged) felt also.
Straighten the long axis
Bring rim of pelvis on rt side to 12th dorsal vert.
Prick left elbow thru, sharpen it.
Alternate these two.
Bend up rt. knee to touch left elbow without letting spine give.
Control in thigh joint. Make a sharp angle at thigh joint as tho closing a pocket knife. Release at knee., Prick ischia thru.
Fasten upper part of femur to a notch in handle of knife, (12th dor.)
Acromion processes must be even in relation to axis or there will be a pull on the trapezius.
Lie on mean plane of body. Acromion and crest of ilium must be in line to reduce cross pulls.

Lecture 2 -- Oct. 24, '29

Each movement is the arc of a circle.

We must consider the foundation is the bones.
Next consider the stresses.
Softer materials arrange themselves in relation to forces.

Mechanical and anatomical facts must coincide
Muscle groupings which controll whole sections of the body direct forces.

If every bone contacted as near center as possible there wld be no angle of resistance away from median line. Every angle of periphery wld fall as near center as wld conform to its particular type of structure. This means weight thrust centralized and axis as long as possible. Ill. Jumping Jack. The more vigorously he is shaken the shorter the axis becomes and the greater the angles of the bones. This is an angular action in relation to the axis. If a bone is protruded so it causes a compensating protrussion, stresses are increased.

The line of power shld pass thru the axis and not thru the angles of bones. Angles shld be neutral.

In a quiet ball lines of force are in balance along its axis a and there is no stress in the periphery.

The boney structure is foundation of weight support, therefore look to the boney structure for the analysis of stresses, as an engineer wld look to the steel of a bldg and not to the plaster.

To reduce stresses all protruberances must be reduced without bending axis. If the crown of the head is off center to the left, the next boney segment must be equally off center to the rt; the next to the left and so on down.

If the crown of the head is back then the chin will be forward, shlderblade back, sternum forward, hip bone (posterior) back, and so on thru knee, ankle to toes. This forces control of structure at periphery. The hips cannot go quite so far back as chest can go forward; the difference must be made up by tension in the soft tissues of the lumbar region. That is, the angle will be equal or the difference made up by added tension in muscles and fasxia. Fascia contracts very slowly not like muscle cells. When contracted it becomes static almost like adhesions.

To reduce stressesand to relieve strain on muscles and nerves, rather than to develop muscles, is the important thing. To hold one part fixed puts strain on axis.

The forehead is the focus of muscles of the face. (The chin is a separate structure) If crown of head is center, the muscular ctr. is projected and vice versa.

Chin to shlder blade. If chest comes forward, fulcrum is at top of sternum and scapulae must go back.

Center of muscular action of chest is middle of sternum. Between chin and lower end of sternum is a structure which cannot be projected as an angle. Muscles are so arranged it is impossible.

Between end of sternum and hips is another muscular center, (lumbar center). It is the great muscular ctr. of the body for control of all body movements. The lumbar region is the guiding point to distribute weight to pelvis and legs. These muscles which connect bones which carry accumulated weight to the legs are larger and heavier than other muscles of the body. The stronger are the muscles from the middle

of the thighs to the lumbar region, the better.

Between chin and scapulae the muscular ctr. is the back of the neck.

Between scapulae and end of sternum the muscular ctr. is the middle of the sternum.

After lumbar, next muscular ctr. must be in front. It is half way down front of thigh.

Between knee and ankle the muscular ctr. is calf of leg.

straight lines

It wld be impossible for a jumping jack to protrude any angles if there were not joints, which bend between the two. At the joints come the weight thrusts. So if ends of bones are protruded weight thrust cannot be centered. The chin cld not protrude if there were no hinge between. Then the weight thrust then no longer goes straight down spine. Between the occipital condyles and atlas comes the weight thrust.

From shin to shlder blade crosses another joint. The pt. of contact is between sh. structure and 1st rib, not just a pt. but a curved area. So bending in 1st Thoracic unseats support of sh girdle at sternum. Then sh. girdle sits upon ribs rather than hangs. (99% of T.B. other than from vocational causes situated in back of lung.) Apex of lung shld be in line with trachea.

From end of sternum to rear of pelvis- fifth lumbar unseated on sacrum. The front thigh muscles become more neutral because lines of force pass thru ~~xxrsxixxxxxxxx~~ knees. The body of muscle is held taut by tendinous pulls.

Thru muscular ctrs. the lines of force wld not work at angles. When angles are reduced lines of force pass thru ctrs. in curves.

Muscular ctrs. are: Forehead- Back of neck (cervicle spine) Middle of chest- Lumbar spine- Front of thigh- Calf of leg- arch of foot with equal action between heel and toe.

Muscle groupings are in area formation and therefore in curves. Muscles encircle joints to guide weights thru so we cannot talk simply in terms of leverage and linear formation.

Miss Todd ----Lecture 3 ---- Oct. 31, 1929.

When the axis of movement and axis of weight are close together stresses are minimized. If spine is the structure thru which upper wgts. travel to pedistals, then all movement of extremities shld contact with spine itself. In the circle of movement you must go back to the axis of movement.

The axis of movement must touch the axis of wgt. in two or more places,depending on the no. of curves, or there is not dynamic equilibrium.

If we cld determine the wgt. of a cross section of the body, we cld appoximate strains by the relation of the two axis to each other. When parts of the body are protruded the axes are separated. Unlock the boney structure to give freedom to softer parts.

When muscles work from muscle center to muscle center the joint swings freely in between. In going thru a hole the animal closes in like an umbrella, tail out, spinal muscles pulling ribs down the back, sh. girdle right up on end as it stretches forepaws thru.

Erectness shld not be a hardening process of uprtness, but merely a matter of alignment. When you stand upright in such a way as to interfere wi millions of cells you dam up the whole works. The bones are not dry but are filled with nerve and blood cells. Wobble back and forth until you get an alignment, moving one cross section back and one forward till you get balance. If you harden anywhere then muscles are engaged all along the line. Then muscles are harnessed crosswise. Every muscle is lost to coordinated groupings which is being used to hold a wgt off center. Daily activities tend to make one harden at the periphery.

What effect has abstract thinking on the musclature of the body? A sheet of rubber contraction means a slow creeping together. There is a draining upwards, sheet rubber contraction in intellectual pursuits. The whole body draws upward to pour into higher cortex cells. The reaction must be from the entire muscular system for there is the oldest response. When you focus on abstract thinking the muscles become less active. You may reverse the strain by thinking of something moving down. Illus. Think of chest as a bell wi water flowing down over the inside. The moment you think movement , the central mechanism pours the nervous energy necessary. The muscles are storage batteries. There must be a reservoir for blood for concentration, as animal has for movement. Driving tension therefore interferes with concentration. Encourage nature to develop and become more highly specialized. Allow every natural function to grow in conformity wi the direction you want it to travel in.

Anything which hardens the inert part of us impedes the progress of the higher cells of the body. Mechanically we enslave millions of cells to hold a part out of alignment. Soften yr surfaces till you hit the axis. You use many small parts. Move each section in opposite directions. Wriggle and squirm in a snakelike movement. Then shrink from sides close to axis. Using multifidous muscles and spinal muscles must lengthen spine for they bring it toward center.

Certain muscles may be overdeveloped by raising the chest so making them work against a normal reaction. By overdeveloping certain muscles to hold the spine straight, then something has to give and the curves of the spine give.

Points where if the bones stick out there can be no muscle ctr. Crown of head - chin - Scapulae - End of sternum - Posterior inferior angle of ilium - Knee - Ankle (tight Achilles) - Toes.

x---You can change the position of the ribs in relation to the middle of the sternum but not to end of sternum.

The line of force should pass thru that area which frees the greatest no. of muscles for movement, which means the muscular center. These centers are:

Cervicle region-- Ctr. of Sternum or upper chest (cannot move this when chest is high) -- Lumbar spine -- Upper thigh at end of femoral triangle - Calf of leg -- Arch of foot (all muscles are arranged to focus wgt., weight from the front arch to the center arch)

If bones protrude at periphery then the points are more active than the points where these lines cross center. Therefore the peripheries are strengthened and the centers are weakened. All the muscles along center must be used to bring weights back to center. This strengthens the centers and frees the peripheries.

Making a First Examination

Observations:

Felt back and front of neck
Went to lumbar region
Went to knees and calves
Felt for boney landmarks

The boney landmarks in the lumbar region are- 12th Thoracic-- Superior angle of ilia--*(feel all around them) Hit 4th lumbar then feel soft tissues in between it and 12th dorsal, on either side.

Get relation of anterior superior spines of ilia to center of hand, axis of the body and 12th dorsal.

To get under lumbar spine, hold patient so she wont try to avoid you, stand facing patient, hold opposite oblique pull one way and then the other as you slip one hand under.

There should be lots of muscle between posterior spines of ilia. If we had our tails these muscles wld be soft. It is important to soften them up.

Relate mastoid, occipital point, and cervicle spine.

Put hand in groin, other hand under knee. Shake femur in socket.

* Crest of ilia

Lecture 4 -- Miss Todd Nov. 7, '29.

If the thigh joint retains its rotary possibilities and freedom then the axis of wgt and axis of motion must be close together, but if the thigh joint is not receiving the wgt either at center, either the side or back must be tightened and the axes will be separated.

In each movement there is a compensating movement in the opposite direction.

If apex of force falls at the tendinous attachment of the muscle it neutralizes the muscle.

Ex. The pectoralis major muscle is attached by a broad aponeurosis to the sternum in front and by a round tendinous structure to the shoulder. Energy shld lie in between in the belly of the muscle. If the chest is pushed out the apex of force is at the aponeurosis and the opposite apex of force is at the shoulder. Therefore the belly of the muscle lies neutral.

At apex tendons of many muscles are fixed. So if angles of bones lie at apex of force, then the tendons of the group of muscles which would move those apeces in relation to the central axis are held fixed and neutralized.

When lumbar muscles are free the chest rides free on ribs in relation to lumbar movement.

The spine must be free at both ends before it can be lengthened. Standing as long and as small round as possible reduces pulls at periphery. In trying to get small round, spine must not break or bend.

A muscular center is a belly center. Apeces are at tendinous centers.

If chest is fixed and therefore the spine, contraction of the psoas muscle pulls the lower spine forward. If thoracic spine is flexible it will give to the psoas. If one end is fixed then both ends do not approach each other.

In analyzing weight distribution in a standing position with one knee raised, analyze it in relation to the single supporting pedistal. In relation to the pedistal a slight bending backward is not a "mechanical reaction" but necessitates a strong contraction of gluteal and hamstring muscles to hold the body off center. There is a difference between a true mechanical reaction and a body reaction.

What differences wld there be from a day of mental work fairly well done, a day of emotional strain, and a day of playing golf rather poorly?

Mental work wld lead to tension upward, all muscles gradually working toward skull; lumbar spine wld be lighter, ribs wld be higher but not necessarilly uneven. All the throat muscles, sterno-slydo-mastoid, hyoid and trapezius wld be tensed; the neck wld be shortened.

From a day of playing glof poorly there wld be more uneven tensions in all the muscles pulling directly on the neck from the stroke. There wld be greater tension in the gluteals, trapezius, rhomboids and serratus magnus.

When fatigue sets in till you get floppy, you never get floppy throughout the structure, you must grip somewhere. The place to grip is rt in the middle of the spine, not with the knees, gluteals and coccygial muscles or diaphragm. These latter are poor mechanical grips, and do not allow the weight to travel to earth by the shortest distance between two points.

Spine can only lengthen by power of concentration of muscles downward, that raises the elevation. Don't rock on 5th lumbar but shorten on line of psoas. A horse in hurdling pulls all his spinal muscles rt down into his hind legs. His neck and forelegs are free. The neck is lengthened like a lasso. Weight plus contractive muscle power throws a lasso- lenghhens it out accurately. Speed and outward traveling of rope is controlled by weight and downward force of muscle. The head is a weight, weight is a force. If you try to lengthen head upwards, all you can do is to lift some muscle upward.

In infantile paralysis never say that a muscle has necessarily lost its contractability If in feeling the muscle in relation to dynamics rather than structural arrangement and leverage, the slightest pulsation can be felt, there is a chance of bringing it back. Work from center, open up all the channels, reduce the strains on surfaces, then the spinal cord may do more than you think it can.

Build up confidence and theories till they put themselves into practice. Strengthen centers, free surfaces,, Control weight at centers for the reduction of strains. Weight is a force which opposes the force that wld scatter things from off the earth. The line of muscle force opposes the line of weight force and shld go with weight force at center. A line of force travels in opposition at every joint.

Cases-- Miss Eldred standing.

Main line of force traveled from inside of ankle to outside of knee. Tight in coccyx. Obturators tight. She shld be deeper from back to front of pelvis instead of coming down to a V.

Correction: Put two perches in rt thru pelvis from back to front.

Think of sitting down in a child's chair which is too small for you. Now walk around but don't let the chair slip off.

Miss Carl-Harris

She holds body weight on rt side, in rt hip. Shlder muscles are pulling upward to left. She is stronger on rt. side because wgts have been carried in rt hip, therefore l. side wld be more likely to give under a strain. The force travels a greater distance in passing from L shlder down to r. trochanter than if it traveled down center. In swaying

from one side to the other she sways much further to the L. than to the R. Develop body muscles on the l. till you can carry the weight over to the left.

Lecture 6 Nov. 21, 1929

Analyze muscles as a tough, rubber band holding section of structure and main support of structure. It would take more power to pull weight away from weight thrust than to move it along wt. thrust. From that pt of view the origin moves more easily than the insertion.

There will be less space covered closer to fulcrum. There will be more action from periphery to center when there is movement from way off ctr. Wgt. travels home thru the origin of muscles nearest ctr.

Muscle action can work at either end and not be superior at one end except as we tend to pull back to ctr.

Contraction means every cell tends to get closer to the cells next it and all cells tend to approach each other. A muscle pulls more at one end only because that end is a more fixed point. If you stand in a certain way, psoas can do nothing but pull spine forward. If you are loose enough in hip joint, psoas will boost up pelvis to meet lumbar, both ends approach each other, If hip is fixed, lumbar spine is more flexible and must be pulled forward. If all muscles around hip are free enough to move rotary joint in all directions within the limits of its ligaments, then neither end is fixed and both move toward each other.

The femoral joint is hardest to keep free - therefore you have to know your weight thrusts. Obturators, pyriformis, quadruceps, etc.- all muscles which tend to move weight from center must be free.

If lumbar and sacro-iliac is weak and femur is not free, of co course lumbar spine will move forward on psoas pull. This is so general a condition it might easily be accepted as the rule.

The alligator exercise is to give a swallowing movement which reaches for the thing swallowed. "Alligator" draws ribs in to reach down after leg. You can't get any suction with the ribs out. First you must aim leg up toward 1st lumbar vertebra, the alligator's throat, then you must work to swallow it. This draws the arch of the diaphragm in. Diaphragm interdigitates with transversalis from the cartilages of the lower six ribs, and in back takes its origin from the 12th rib and 1st lumbar vertebra and by the crura from the upper three or four lumbar vertebraw. Ribs held up invariably stretches psoas. Intercostals will make crura less strong and will make the action of the diaphragm more shallow at its base. In the alligator everything should shrink into the throat, including the crura of the diaphragm.

If there is suction in the throat, psoas and leg go together, but if fascia of sacrum is so tight that the spine cannot lengthen downward, then there is strain trying to get suction. Then you must free the sacrum. Quadratus lumborum was more active before trying to bring two points together wi no movement possible in spine either down or up because shlders and ribswere fixed above. Until spine can slide clear from skull down, don't give alligator. Rather loosen upper structure, get more "attic space." If sacrum doesn't give the spine will be forced down on table.

Tight obturators stretch transversallis and quadratus lumborum. The natural standing position wld be then to tilt the pelvis way down. To counteract that the ribs wld be raised to hold the body up. Alligator wld then be good for tight obturators.

Anything which makes for pressure down to table rather than down to pelvis is bad.

In tight sacral fascia wi tight muscles between the posterior spines of the ilium, the hamstrings wld be tight and the knees pulled up in back.

Balancing Sitting Position

In sitting, even when leaning against the back of the chair, put the wgt on the ischia, not on the end of the spine. Lighten wgt on back of chair.

In changing don't let go too suddenly. A precipitated wgt. is always a dangerous thing. Reducing peripheral pulls, even tho let go at ctr. does relieve.

Pulling ribs down and in straightens back a little. In all positions keep wgt as close to ctr. as possible.

See if supporting bone is under axis and bring all parts as close to axis as possible with ctr of gravity as low as possible.

If bones were in line every muscle wld have its own proper length with no ligament stretched. Why use other forces when wgt. itself will balance forces?

Correction of slumping in an armchair-- Miss Swiegard.

Stomach is pushed out, crowded over colon.

The line of breathing is only from chest back to spine. The trachea aims the air towards the spine not into the lung. If she takes a deep breath, she has to raise her chest--the 3 top ribs. The sternum lunges rt out. There is throat suction and lavator and trapezius muscles are used to lift chest. There is no grip at all on psoas. The lower apeces of the lungs are out of axis so no air goes into them.

Lifting one leg at a time pulls on lumbar and 12th dorsal by way of the obliques.

Correction: Find your two axis. Don't use the peripheral muscles to hold original position when the central muscles are trying to bring axes together.

Thoracic structure must be raised and both axes brot forward. The spine is the control of all the ribs, the lower six pairs were too far back. The spine pushes them forward. Go forward then to ischia Psoas opposes obturators.

Now the pressure has become too great on head and thighs. Rise on axis.

In getting up from the original position, if the axis had not been straightened first, functioning wld have been wrong for hours because of tensions. Make correction of a bad position before you change it. Don't trust to movement to make adjustments because then you start with some muscles all stretched and others tightened.

Sitting in straight back chair. Miss Noyes.

Is sitting on end of coccyx, ribs back hard against back of chair. Lifting alternate legs increased pressure first on one then on the other. She lifts in upper thoracic and lower cervicle. Because middle trapezius is stretched and now slack there, lifting the leg pulls rt on the back of the neck.

Determine axis of wgt in relation to ischia. Bring spine forward to axis of wt where it is out. Go from the ctr of the head to the ischia. You are inclined to pull yr body forward. Keep yr axis working, control is in the axis, Bring the axis of the spine forward to meet the axis of weight. There is now less pressure on shlder. Let the spine carry you forward like a knife blade cutting thru.

Sitting crossing rt. leg. Miss Edgerton

Is sitting with wgt. on left thigh not on ischia.

To lift both legs must bring iliacus into play and keep 12th

forward. Psoas parvus must help. Iliacus, pectineus, and fascial structures are weak. Pelvic rim in, ischia to front of 12th reduces pull on neck which became straighter.

Lift alternate legs. There is still too much wgt. on L.

Put crutch under R. arm Latissimus dorsi on R. side is weak so wgt is held over to L.

Lecture ---- Miss Todd---- Nov. 27, 1939.

Weights act in a vertical line. If other forces pull a weight off it will have to work back to the vertical line or axis of support. You can measure how heavy a hanging weight is by the effort to hold it up. Force- weight- operates in 2 ways, compression and tension. Weights can only sit or pull, hang or rest. If a weight is held off center it still works on a vertical line and the furtheraway it is the greater the leverage and the harder work for the supporting column to deliver the weight to the ground.

The prime requisite for a machine is stability. All parts will be as near to the axis and the base as possible without sacrifising their freedom. If a machine were standing on end, its dynamic equilibrium would bring about entirely different strains. It would have to work on a new axis.

In sitting in a slumping position in a chair, there are two axes functioning. A bulk of weight is against the back of the chair, another at front of chair. The body is balanced and swinging between. The two pressures are likely to be equalized. Heavy pressure on back leads to more below. This forces the spine back to the universal curve instead of its four curves causing a stretching of the spine. Muscles which pull sideward may pull on swaying spine causing unequal pulls as you use one leg or the other which produces inequality in muscular and ligamentous tension.

Semi-circular canals do not give a kinisthesia, only a balance of the whole body. They do not report small, individual parts in relation to a section. The canals will try to balance large parts, getting balance either by weights or muscles. Kinesthia is developed in the mid-brain. If you lift a book you are not conscious of muscle movements anymore than when you make a picture to get psoas to work.

"Stealthiness" means buckled into center. The central muscles pulling to the spine make as long as possible and also as strong. Self-consciousness always stimulates sensory centers. When motivated we are not self conscious. Animals have kinesthesia throughout body. A lion keeps its same gait, its free stride even in a cage, it takes one step at a time. A man in his self-consciousness would adapt to the cage and would live in his sensory organism being conscious of the bars before he met them. Self- consciousness always plays through the sensory organism.

Between mechanical & psychological poles lie anatomy, physiology, heredity.

Think of lines of force in relation to an axis.

In a broken cartilage in the knee, the semi-lunar cartilage slips It is a very difficult condition. A straight cartilage could be held. In a circular structure, it is fluted on one side. It would take 6 months for a semi-lunar to come back. It slips & slips till one finally lands in a surgeon's hands. It is difficult to keep a person in bed 6 months. Get a firm knee cap. Bathe knee 15 minutes night & morning using hot and cold compresses, putting salt in the hot water. Keep knee up when seated. Release ligaments and fascia in popliteal fossa- release circulation there. Give correct sitting position with axis straight. Never be on feet for more than an hour without sitting down 10 minutes with foot up. After hard upward stroking under knee to stretch tissues underneath rub in Absorbine Jr. Teach how to stand with legs forward and to bring bone thrust inside cartilage and fairly well back.

Walking with alternate knee bending.

Connect a string from the apex of the femoral triangle to the hip joint. Pull the string. In lifting the knee get the foot drawn back between the tibia and fibula, beneath the ilio-femoral ligament in front. Let ischia drag down to same point on back of leg where big toe where big toe has been drawn back to. Let big toes just dissapear by control back of inner malleolus. Feel as though big toes were gone.

Mrs. Bates-

The point to which the big toes disappears is higher than on the calf of the leg- 3 inches below the popliteal fossa. Let the inside maleolus of left foot go with string. Tense it. Hold it all along the line. Now weight on end of spine. Gather in at front- Fasten to 12th. Smaller round ribs. (She does not hold inner maleolus up, but functions more one inch below knee and at sides. She is high from fatigue habit of focusing lines of force to knee. She doesn't keep just back- Muscles and fascia between gastrocnemeus and bone are stretched , not giving firm support to ~~recei~~ receive weight. Her Achilles may be short because she does not get back in enough.

Sit- sharpen heel bone till you stretch lower 1 inch of Achilles. Do not bend foot to a sharp angle. Let the foot give upward but not by pull of big muscles. In the latter case the fascia is tightened by the flexion of the ankle, the tendon Achilles is stretched, circulation interfered with as well as the muscles that draws the big toe back. Feel of the outer muscles. Practise standing pulling big toe back.

Dec. 10,'29 Miss Todd Lecture 9

Weight functions thru the axis of the structure in relation to its base.

In loosely jumping in place, let the pole stand still and the parts flop around it, surfaces free, but strong centers.

At beginning of lesson a severe sacro-iliac pain was corrected for Miss Eldred by reducing pectoral muscles which were holding ribs high making a greater strain on the top of the structure and weakening the support below.

Chest up gives tensile ~~strength~~ stresse in front and compression in back. The debutente slouch gives tensile stress in back and compression in front.

To reduce pull you must know how much higher the ribs shld be in back than in front.

To determine where the stresses are you have to put structure on a hard surface. On first lying down posture patterns hold, then weights begin to fall back to table. One relaxes or begins to feel strains.

Case 1. Feel difference between ilium and femur. It is tougher on one side.

L. foot is closer to axis- R. is way off. The line of force of the R. leg passes diagonally out of the body. The line of force of L. leg goes within the joint. Obturators are tight on the R. side. R. foot is diagonal to knee. L. leg does most of the work. R. is outside of the axis. R. knee turned in., L. leg was under body, axis better.

Think direction, location, motion.

Case 2. Left knee is higher. L. anterior spine more lateral, sharper, thinner tissue. R. ant. spine thicker and tougher tis.

Both knees to R. The L. almost cuts axis.

Tend to pull R. ant. spine in to L. and push L. out.

The L. side is hollower. ?

There is tendency to a R. weak sacro-iliac.

Tight obturators on R.

Tend to swing weight over to R. There is tension therefore and a lateral curve to L. Fuller on L. Gives to hand less.

Case 3. Place feet six inches apart, toeing slightly in.

Head is to L. Weight thrust greater on L. than R. Weight off L. greater fullness of muscles on R.

Left foot almost toed in, axis- R. slightly off.

Left knee higher than R.

Pressure on L. posterior spine of ilium (weight there) pull on L. spinal muscles which throws upper part of chest over to R. R. ribs and spine pulled over to R. Cross fibres engaged. L. sacro-iliac held back.

There shld be no more movement at 5th lumbar than at 3d or 2d, or elswhere.

Differences in pelvis in male and female.

The depth and size of acetabulum is greater in the male. This is the surest means of distinguishing. There is more flare to the female ilia and pubes is more u shaped but these differences are not positive. Male pelvis is narrower, closer to center, the acetabulum deeper to carry heavier muscles. It shld therefore be easier anatomically to keep his axis in line with his tread. Women probably cld not run with the same speed.

In the four footed position the legs are extremities of 2 sides of an arch of which the sacro-lumbar joint is the keystone. The sides

are wedged in by buttresses (femurs) to aid the beam(pubes) If the arch begins to spread the keystone will settle.

In upright position the posterior facets are in a vertical line.* ~~line~~ wall and the erector spini and gluteal hang on to keep the weights from sliding off. That limits the joint, and the whole spinal group loses its function. The problem is to keep the ties in front to reinforce the beam to approximate power of support back against lumbar.

A flabby lumbar spine gives a contracted dorsal, ribs out at side, chest flat. In proportion to length of lumbar gives short dorsal because axis has been shortened.

In feeling a muscle note if muscle is being ~~xxxxxxxxxx~~stretche over bone when bone feels sharper or if muscle feels thicker over bone showing it is holding.

Lesson 10---Miss Todd Dec. 11, 1929

Shoulders are superimposed on torso. Legs carry torso around, arms move but neither shld interfere wi main structure, the trunk. Get consciousness of centers. Integrate all structures which keep shell or wall of trunk intact. Don't have any legs or arms in picture. Pictures- Potato- wrap mummy- Parts hang equally from all sides so the load is equally distributed and there is no strain at one particular point. Amputate yr arms and legs the body wall is complete without tnm

The 1st cartilege(between 1st rib and sternum) is only about 1 inch, just space enough to give no pressure between rib and clavicle. The moment the clavicle is pulled back it rests on the 1st rib behind the cartilage and the shlders hang then from the back of the neck where the 1st rib joins the spine. The impact goes straight back to spine by 1st rib when the clavicle rests upon it. When the impact passes thru the sternum and by way of 24 ribs to the spine it is like the snow shoe$ which makes lightness and strength possible thru equalization of stresses.

The weight of clavicle resting on 1st rib and then holding clavicle back place much extra work on the fibres attached to the cervicle region and 1st thoracic.

To relieve all strains at back of neck close in on the 12th, narrow dor. angle of ribs. The moment you take the strain on 12 ribs you have automatically freed longitudinal fibres of the spinal muscles because of so much movement in the transverse fibres.

Strengthen the roots and reduce stresses on outerborder of bone Centralize the bones, strengthen by activity and control at ctr not by stiffening. Bal. is the rt relation of parts. Educate in relation to static position rather than static equilibrium. You can have dynamic equilibrium without static position. Work is valuable not to develop muscles but to develop balance.

Exercise- Starting position on hands and knees. Bal. 12 tumblers on the vertebra. Don't let any one slip. Bend both elbows. Raise R. leg backward and L. arm forward close to ear. Bend elbow- sit back toward heel. Drop top of head to floor keeping 12th in- pubes up- shrink ribs not by wriggling.

* To keep a perfect arch it would be necessary to sacrifice the body wall —

The weight is being carried thru the spine more into the left leg xxxixxdxixxixxgxxxxx than into the rt. while driving a car. There is only one pedestal for the spinal column, the rt. leg acting more as an arm in its activity.

The middle section of the trapezius is in play with the deltoid and is more developed. It is used for leverage in whirling the wheel in driving. Ribs are not bulged on the rt, if so, the picture wld be changed.

Elbows, hips and knees are off line more than the head, therefore the spinal muscles must be workingto maintain the axis.