

ALL SCHOOLS



EXERCISE BOOK

NAME

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Margaret A. Brown.

Tray.

Top Shelf.

Astringent

Dettol

Mercurochrome

Liq Potassi

Peroxide

S. V. M.

Remover.

Sticks

Soothing Ointment,

Bottom Shelf.

Powdered Soap.

Powder

Cotton Wool

Lambs Wool

Cream

Bowl

Spatula -

Massage

- Remember to always keep pressure on plantar
1. Place hands back to back against plantar & massage dorsum with thumbs.
 2. Tiddles Thumbs on plantar & massage between tendons with fingers.
 3. Massage tendons with thumbs in circular motion one after the other.
 4. Separate metatarsus bones with fingers, keeping thumbs pressed against plantar.
 5. Scissors. One hand on top & bottom of foot reverse.
 6. Rotating toes, great toe medial, other toes lateral.
 7. Rolling foot near toes.
 8. Rub thumbs up plantar from heel to spread metatarsal with fan-like movement, then across.
 9. Flat hands down plantar
 10. Massage ankles, reverse
 11. First leg movement - Clasp hands over toes with thumbs underneath and bring along good pressure down plantar under ankle and along leg. Bring hands back. Thumbs on top.
 12. See-Saw One hand on leg other on plantar.
 13. Caterpillars. Join hands over metatarsal arch. Caterpillar movement on ankle & leg.

cont

14. Roll leg muscles, fingers spread.
15. Hold foot in hand rotate circular movement medial, then backwards & forwards.

Lecture 1. Tissues (Body)

man is the product of a single cell, the fertilized ovum. It is complex although so small. The cell divides into 2, these 2 into 4 + so on till there is a mass of cells which differentiate into 3 layers
epiblast, mesoblast, hypoblast.

Skin + nervous tissues - connective tissues - inner linings.

There are 4 main groups of tissues, epithelial connective - muscular + nervous.

Epithelial cells are - scaliform, columnar, cubical - they pour out mucus or phlegm + provide a moist surface. In the air passages epithelial cells are ciliated. They remove dust + microbes inhaled in breathing.

They depend for the growth on Vitamin A. contained in green vegetables + animal fat. They are found in the skin glands, + soft linings of the body.

The connective tissues are a large group. Areolar or connective tissue proper, forms delicate sheets of transparent material binding organs + parts of organs together. Sheaths for muscles, nerves, + blood vessels. Blood vessels + nerves run into it to their various destinations, sometimes it becomes

Lecture 2 cont.

strong & fibrous to form tendons & ligaments
Adipose tissues contain much fat & are held
in together by areolar tissue. They grow in
around muscles & under the skin, forming a
store house of fat for combustion & preventing
rapid loss of heat from the body. As a packing
material it supports internal organs &
protects from pressure delicate organs &
structures as in the palms of the hands &
pads of the feet.

Epiblast - outer - Organises skin, brain,
nerves, sensory organs, corpuscles, development
of bone -

Mesoblast - middle - Organises the muscular
circulatory systems, skeleton & connective tissues.

Hypoblast - inner - Organises the mucous
membranes, respiratory, & digestive tract
& glands.

Cont. 3

end of a bone is known as an epiphysis
Articular cartilage at the end of a bone
normally never changes.



Lecture 2. Development of Bone.

Bone is the hardest tissue forming the framework of the body, giving support + shape.

Bones surround + protect some vital organs.

Give points of attachments for the muscles. Some as levers + make movements possible.

The outer surface is compact tissue + the underlying bone is called cancellous tissue.

A tunnel leads through the compact bone to a central canal containing marrow. +

having fine branching canals (Haversian) taking blood vessels, nerves + lymphatics for the repair and maintenance of bone tissue.

The periosteum or exterior covering of bone transmits the blood supply to superficial compact bone.

Before birth the skeleton is laid down in cartilage, which is later impregnated with lime salts + ^{then} replaced by real bone.

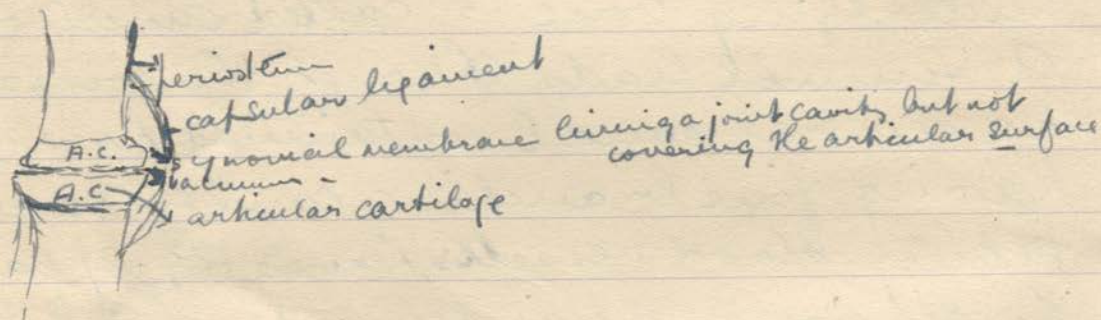
Sacrum which are spaces among the discs of bone, building cells contain bone building cells + are filled with nutriment from the tiny canals.

Bone grows from the primary centre in the shaft towards the ends.

A secondary centre of ossification at the

Lecture 3 cont

at their articulations, they are pliant & flexible to permit & limit movement, but inextensible to prevent their yielding readily to pressure. Continuous strain may cause them to lose normal tone & toughness.



Lecture 3 Growth of Bone

In the long bones the main centre of ossification is in the shaft or diaphysis (about 2 months before other centres appear, usually sometime ^{later} after birth in the ends of long bones.

The part formed around these secondary centres is called an epiphysis.

At birth with few exceptions long bones have cartilaginous ends in which no secondary centres have appeared.

Parts of a bone. a process, a projection, a spine or spinous shaft projection, tuberosity - tubercle - large & small rounded part.

A crest, a prominent ridge -

Head - enlargement at the end partly articular.

The neck, constriction below a head.

Condyle - are rounded articular eminence generally a modification of a epiphysis

Fossa a pit, Glenoid - cavity - a shallow articular depression.

Cotyloid - a deep articular depression

Sulcus - furrow.

Foramen - a hole or perforation -

Sinus or antrum - cavity of a hollow bone

Ligaments of the foot ligaments are bands of tough fibrous tissue holding bones together.

The Astragalus or Talus Joint -

The Talus is a bone of note

It cups its head in a little boat.

There is a band of elastic to deepen the cup.
and a shelf that partly holds it up.

It sits like a saddle

The OS Calcaneastraddle

Two facets on the under side

Permit it slightly to rock & glide.

Upon the dorsom calcaneal

Its upper surface is like a wheel.

Fitting the fibial arch above

Being broad in front & narrow behind

Is the reason you will call to mind

For the firmness of stance in dorsal flexion
and its wobbly weakness in full extension.

although no muscles are attached

The talus is no bone detached

to Scaphoid OS Calcis - Talus all three -

from inner & outer malleoli

Combining all firmly the fascioli
may the joints this bone share in your
mind be abiding

They are ball & socket, hinge & gliding.

Lecture 4 Deltoid Ligaments

The internal - lateral ligament - Two layers
Superficial & deep - The superficial is a strong
flat band attached to the inner malleolus,
whose fibres go down to the scaphoid & spring
ligament down to the OS Calcis, backward
and outward to the inner side of the Astragalus
(Pott's Fracture)

The deep layer is short & thick. & binds the
malleolus to the inside of the Astragalus, & is very
powerful -

The external lateral ligament has three
bundles of fibres - Anterior, posterior fasciculi
go from the external malleolus to the
Astragalus & the middle fasciculus like
a rounded cord goes to the middle of the
outer side of the OS Calcis

Lecture 5 Cont.

necessary at the first stage. Shoes, heat for the ~~rest~~ chronic stage, iodine, menthol, glycerine + ichtha. (fish oil)

Under the heel, - rest, sponge rubber pad -

Teno Synovitis, Inflammation of the synovial membrane of the tendons. Over strain.

Chronic, Teno-Synovitis - Tuberculosis in both types - There is swelling with continuous pain.

Strap. massage + voluntary movements as soon as possible

For simple chronic conditions, rest, firm pressure counter irritation. Raise the outside of the shoe to rest peroneal tendons.

Adventitious Bursae :- There is one over the external malleolus (talion's union) one over the cuboid in equino varus (club foot) others at points exposed to pressure in different forms of club foot over the 5th meta head - over the scaphoid tubercle. over the joint of the first cuneiform + the 1st metatarsal + the calcaneal bursa between the inferior tubercle of the os calcis + the plantar fascia.

Lecture 5 Normal Bursae of the foot -

A Bursa is an extended lymph sack, with thickened walls, found where there is friction or pressure.

between layers or structures, between muscles or tendons + bone or anterior to a synovial joint.

Others are found between the skin + some prominence beneath it.

There are two bursae at the insertion of the tendon Achilles, one between it + the os calcis (anterior) + the other between it + the skin. The former is the largest in the foot.

Tendon sheaths are similar in structure to bursae under the heads of the metatarsals.

Acute bursitis may be simple or infected

Symptoms: Swelling, tenderness, pain with movement, fluctuation with fluid observed.

A sudden onset is the result of injury.

The chronic form suggests continued slight injuries. First there is excessive fluid then swelling of the walls + swelling due to fibrous tissue. With infected bursitis there is pus in the fluid + the function of the joint is affected. The patient is definitely ill.

Marked bursitis at the first metatarsal head is bunion. Treatment, Rest in the acute stage + padding to remove pressure, quick treatment

Lecture 6, cont -

fluids. It is thicker in the leg which needs to
more.

This superficial fascia lies just beneath the
skin, which it connects with the deep fascia

It contains much fat, which being a bad
conductor, prevents loss of heat from the surface
of the skin. It permits easy movements of
the skin

Lecture 6 Fascia & Muscles

Muscles in developing are differentiated in a mass of tissue of low specialisation. A certain amount of this tissue remains undifferentiated around each muscle mass; some is left between the fibres of each individual muscle, around each separate muscle & around each group of muscles.

When it surrounds a separate muscle, it is known as the muscle sheath & spreading over whole groups of muscles is known as deep fascia.

Fascia may therefore be regarded as tissue left over between the more specialized differentiated tissues.

It is the bodies packing material, between tightly packed structures & organs it exists as organs & sheaths or as fibrous tissue (Ligaments).

In hollow parts of the body where organs expand & contract fascia is abundant & exists as loose strands in the spaces between neighbouring organs.

Thus there are fascial planes, fascial spaces. These are important since fluids from organs or vessels may track along the fascial plane or drop into fascial spaces. Fascia serves

these purposes -

1) It carries the blood vessels by lymphatics & nerves which supply an organ 2) It acts as an elastic stocking, to resist the passive gravitation of

Lecture 7

muscular tissue (flesh) Its special property is its ability to contract, + thus cause movement

Three kinds of muscles.

- 1) Voluntary (under control of the will)
- 2) Involuntary + Cardiac; heart, The two latter are controlled by the nervous system.

Voluntary muscles cells are $\frac{1}{500}$ of an inch in dia. + about an inch long. (fibres) They are collected into bundles + enclosed in fibrous tissue. The bundles are bound together to form the muscles which cover bones + sheets of muscles surrounding the trunk.

Each fibre is enclosed in a sheath + the contractible substance of the fibre itself has a striated appearance from the number of little discs of which it is made up.

When fibres contract they become shorter + thicker + so does the whole muscle.

Voluntary muscles being attached at each end to a different structure are able by contracting to alter the relative positions of the structures. We see this in limb movements.

The heart is made of striped muscle of a different kind
special.

Muscles	Origin	Insertion	Function
Back of leg superficial layer. <u>Gastrocnemius</u>	By two heads from the inner + outer condyles of the femur.	By the tendon Achilles to the lower posterior surface of the Os Calcis	To lift the heel extend the ankle joint
<u>Soleus</u>	Upper surface of tibia + fibula	"	"
<u>Plantaris</u> absent in 7% of people	External condyle of femur	Sometimes to sole of foot	Ankle joint
<u>Popliteus</u> Deep layer.	Outer condyle of the femur + the posterior ligament of knee joint	The posterior of tibia	It flexes + rotates inwards (knee)
<u>Flexor Digitorum Hallucis</u>	Lower 2/3 of posterior surface of tibia	Base of last Phalanx of the great toe extends foot + slightly everts it	Flexes last Phalanx.
<u>Flexor Digitorum</u>	Lower part of tibia (Posterior surface)	Base of the last Phalanx of the 4 outer toes	Flexes last phalanx + 2nd + 3rd phalanx + medio tarsal joint + everts the foot.
<u>Tibialis Posterior</u>	Posterior surface of tibia + the medial surface of fibula from upper end to 2/3 of lower end just above the ankle.	Tubercle of the Scaphoid + bones of the tarsus except Talus. to 2-3+4 metatarsals.	Pulls the scaphoid against the head of the Talus. Broadens the tarsus supports the spring ligament + thus strengthens the inner longitudinal arch.

fibula

Lecture 7 continued.

The muscles of the internal hollow organs whose walls can contract & expand are involuntary. The cells are not more than $\frac{1}{500}$ of an inch long, & have not the striped appearance. They are found in digestive tubes & bladders, tubes, blood vessels under the skin etc.

Front Leg Muscles.

Lecture 9-

30.10.46

Tibialis
Anticus

Gripin

Outer Tubercule of tibia
 $\frac{2}{3}$ of its outer surface joins
under anterior annular
ligament to 1st cuneiform
base of 1st metatarsal - Plantar
Surface.

Flexes ankle
joint raises
inner borders
of foot -

Extensor Longus.
(Proprius)
Hallucis

from middle $\frac{2}{4}$ of anterior surface
of the fibula. & inserted into ligament
behind 1st tarsal Phalangeal
joint & base of distal phalanx of 1st toe

Straightens & extends
toe & helps to flex
the foot on the leg.

Extensor Longus
Digitum

from external tubercule of tibia
& $\frac{3}{4}$ of upper (surface anterior) of fibula
insertion dorsal side of 4 outer toes
Last toes

Extends toes &
flexes ankle
joint -

Peroneus.
Tertius

Lower $\frac{1}{4}$ anterior surface of
fibula to base of 5th heel -
Dorsal surface.

Flexes ankle
& helps evert
foot

Muscles in back of leg extends ankle & flexes toes -
" " front of leg extends toes & flexes heel

Muscles at back & side of leg are 5 times stronger than
front

Muscles in side of leg.

6. 11. 46.
Perone = Fibula -

Peroneus
Longus

Upper $\frac{2}{3}$ of outer
surface of fibula

into outer bases of 1st cuneiform
+ 1st metatarsal
(Note) Its tendon lies along with the
tendon peroneus Brevis in a shallow
groove behind outer malleolus,
underneath annular ligament
passes below peroneal tubercle
round + under cuboid below
long plantar ligament to outer
side of 1st met base + 1st cuneiform

Pulls on these 2 bones
in direction outwards
across foot cuboid + up
on outside of foot. Braces
the tarsus. lifts outer
border of foot + depresses
inner border.

Peroneus
Brevis

Lower $\frac{1}{3}$ of outer
surface of fibula

Its tendon lies above peroneal
tubercle + is inserted
into outer part of base of
5th metatarsal

Lifts outer border
of foot extends
ankle + helps
invert sole.

13. 11. 46.

Plantar Muscles —

Layer 1st A.H. F.B.D, A.M.D.

2nd F.A., F.L.

3rd. F.B.H., F.B.M.D, A.H. (T.P.)

4th. 4th D. + 3 P. . I.N.

1st. ^{A.H.} Abductor Hallacis.

F.B.D. Flexor Brevis Digitorum

A.M.D. Abductor Minimi Digiti (small toe)

2nd. F.A. Flexor accessorius

F.L. Flexor Lumbrials

3rd F.B.H. Flexor Brevis Hallacis

F.B.M.D. Flexor Brevis Minimi Digiti

A.H. Adductor Hallacis

T.P. Transverses Pedis.

4D. 3.P. Four Dorsal, 3 Plantar, Interossei
Blood.

Blood is meso blastik in origin + supports the body nutritively if not mechanically + the tissue cells receive nourishment from it. (at the capillary stage) + discharge waste into it through the lymph in contact with their cell walls.

Plasma is liquid part of blood, + contains water, gasses, food, blood proteins, salts, protective substances, internal secretions + waste.

Serum is the watery portion of blood after coagulation
Lymph. resembles blood but is more dilute + has

no red corpuscles. It is found in tissue spaces
& is gathered into small vessels, the lymphatics.

It helps in the absorption of fat

The vessels pass through the muscles carrying
waste to the blood stream

Red Corpuscles (Erythrocytes) contain haemoglobin
iron, protein, which combines with oxygen

(Red cells are lost through lack of salt)

They carry oxygen in combination with
haemoglobin; fatty substances & sugar -

They prevent the blood becoming too acid
or too alkaline. They are found in bone
marrow. Iron must be available & vitamins
and hormones

They live about a week.

Leucocytes act as scavengers & resist infection

They are able to penetrate tissue & return to the blood
stream

If over 10,000 to cubic millimetres inflammation
exists somewhere in the body.

They aid the body cells in growth & repair

20. 11. 46.

arteries of leg + foot -
Popliteal

Anterior Tibial - Dorsalis Pedis + D. Hallucis

Posterior Tibial
(Peroneal)

Veins
Long + Short. Saphenous
enter Popliteal.

Inner + Outer.

Plantar, Femoral

Venae Comites
(Companion Veins.)

Anastomose .

Superficial Deep.

Arteries + Veins .

The Popliteal Artery divides into 2 branches at the lower border of Popliteus muscle :- The posterior + anterior Tibial (Superficial or lower third).

The Peroneal with its branches is a branch of the posterior tibial artery. It supplies muscles skin outside of heel, medulla of fibula + has branches communicating with posterior tibial artery. The posterior Tibials + other branches go to medulla of tibia, the skin, the internal malleolus inside of heel. Its terminal branches are the inner + outer plantar arteries.

The inner plantar artery ends at the root of great toe by anastomosing with the plantar digital artery on inner side

20.11.42 cont.

It supplies the inner side of foot.

The lateral plantar artery supplies the sole + toes + forms the plantar arch, its branches open into the dorsal interosseous arteries.

The artery to the first cleft comes from the dorsalis pedis.

(The anterior tibial artery) comes forward between the heads of the tibiales posteriors, passes between tibia + fibula (deep down) to the front of ankle joint a line from the front of the head of tibia to a point midway between malleoli would mark its direction. At the front of the ankle it is called the dorsalis pedis artery.

It lies between the tendon of the Extensor digitorum hallucis + innermost tendon of Ext. digitorum.


It passes forward on Astragalus, Saphoid, middle cuneiform until it reaches the proximal end of the space between the 1st + 2nd metatarsals.

It plunges down to join external plantar artery completing plantar arch.

a branch known as Dorsalis Hallucis goes to the great toe. There are Tarsal + metatarsal branches.

Veins -

The veins of the lower limbs are superficial. The superficial veins lie in the subcutaneous tissue, superficial to the deep fascia, receiving

through it branches from the deep veins.
They start on the dorsum in an arch, curves
forward  which receives branches from the
tars + dorsum + communicates with the veins
accompanying the dorsalis pedis artery.

At the inner + outer ends of arch, 2 large veins
start, The long or internal + short or external
saphenous. The internal ends in femoral vein.
It receives many branches from skin & ^{communicates} _{ates}
at intervals with deep veins -

It receives two large branches, The internal
& external femoral, cutaneous, before it enters
the femoral ~~arter~~ vein. Ten to 20 valves in it.

The external saphenous comes from the outer
end of plantar arch, at lower part of centre of
popliteal space, passes through deep fascia +
between the gastrocnemius heads + penetrates
the popliteal vein.

It receives many branches from skin +
communicates at intervals with deep veins
accompanying peroneal artery.

It communicates also with internal saphenous
receives a descending branch from lower
back part of thigh 9 - 12 valves.

Deep veins accompanying the arteries below knee
There are 2 to each artery communicating at intervals

20.11.46 cont

with each other (companion veins) venae comites)
Lymphatics are superficial & deep &
accompany veins.

Long Flexor of Toes ^{27.11.46.}

Long Flexor of great toe

Sibialis Posterior / Peroneus Longus -

" Anticus -

Peroneal tubercle referoneus Brevis & Longus
only one muscle on top of foot -

Short extensor of Toes goes to 4 inner toes, not
little toe, Extensor Brevis Digitorum

Morton's Toe -

Long Saphenous accompanied by Long Saph Vein

? Questions

Bone, Periosteum, osteoclast, osteoblast
breaks down, Builds up -

What is capsular ligament, (that surrounds a joint
secretes synovial fluid

Lig on sole of foot (Long & short Plantar
function, pulls bones of tarsus to

ankle, hinge joint
astragalus, os calcis & scaphoid, Ball & Socket

27.11.46.

Nerves.

Lumbo, Sacral plexus.

Sciatic (Internal + External Popliteal)

↓
Posterior Tibial

↓
Anterior Tibial

↓
Internal + External Plantar

↓
Short Saphenous
nerves accomp. short saph vein -

Nerve cells called neurons are long fibres containing bulbous bodies in which are nuclei. At one end of bulb are thin branching projections called dendrites, at the other end a long thread called the axon has small branched endings.

The axon of one cell connects with the dendrites of the next + the latter axon with the dendrites of a 3rd cell + so on. The junction between dendrites + the end of an axon is called a synapse.

(Synapses are found in brain + spinal cord)

The junction of a nerve + muscle takes place by means of a synapse. The axon branchings of a neuron (nerve cell) are embedded in the surface tissue of the muscle fibres + convey impulses to them.

have two kinds of nerves those carrying impulses to the brain + those which conduct away from the brain to the muscles + glands. The former are known as receptors, sensory or afferent + the latter as effectors, motor or efferent.

Cont 27.11.46

latter as effector motor or efferent nerves
a certain strength of stimulus is required
to cause a muscle to respond at all, this minimum
is a threshold after the maximum contraction
is reached no further stimulus has any effect
(If the threshold of all muscle cells were
identical an animal would be an automaton
bouncing in uniform jerks?)

Skin

4.12.46

Cutis, Dermis,
Common, Dermo.

True Skin

3 Layers.

Reticular, Vascular.

Papillary.

Glands.

Sebaceous (oil)

Sweat.

Hair Follicles

Epidermis
False Skin.

5 Layers - Stratum

Germinatum (Mucosum

(Prickle cell, Daughter cells

Melphighian Layer.)

Granulosum

Lucidum

Corneum (Horn Keratin

Skin consists of two distinct parts: (Epidermis -
Dermis, Chorion, cutis or true skin,
Separating skin from underlying fascia & muscles,
& is subcutaneous fat, through the epidermis pass
the hairs & ducts of oil & sweat glands. Into the true
skin pass the arteries; while venous & lymphatic
vessels drain from it. In it are nerve fibres &
nerve endings, sweat glands, sebaceous glands & hair
follicles. Excessive friction on the corneum
increases the activity of the stratum germinatum
& Keratin is piled up.

In the cellular spaces of the corneum ^(horn) microbe
organisms easily make their way, which are
dangerous if & when they reach the true skin.

The function of the cornium is protective
Functions of skin.

Prevents excessive loss of fluids, protects from injury (as in case of corns callouses, etc) chemical injury heat + cold, infective.

It is a sensory mechanism

It helps to regulate temperature through the superficial blood capillaries + sweat glands nails teeth etc are for defence.

Nutritment + oxygen are derived from circulating blood blood largely from bone marrow + oxygen from lungs.

Its healthy activity depends on the internal secretions of various glands, such as thyroid pituitary + adrenal.

11. 12. 46.

nails —

Subungual; Helomata
Calloused nail groove.

Ingrowing toe nail

Secondary Infections

Paronychia (Feloniamaris, whitlow)

(Periostitis, osteitis.)

Onychia, Onychocryptosis, onychauxis, onychatrophia

Leuconychia - Spoon nail, onychorrhexis,

Hyperkeratosis, - Eudorbenatoris, Epidermophytosis

Hypertrophy - Verruca Pedis. Hot Papilloma

neuro vascular-

Nails are localized areas of thickening of the epidermis. The bed resembles the deeper portions of the epidermis having a stratum germinativum on a grooved corium, which, in this case is supported by the bone of the terminal phalanx & is highly vascular & sensitive. Superficial to the stratum germinativum is the stratum mucosum followed by the stratum lucidum which forms the nail itself. The root is hidden by a fold of skin which grows over it & occasionally this fold is continued along the side of the nail bed forming the lateral nail groove. Nail grows in length from the root & in thickness from the bed or matrix.

Diseases of skin & nails

11. 12. 46 cont

Subungual Helomaker - on the lesser toes under outer corner of free edge + under great toe nail - sometimes the nail is separated from the bed + forced upwards.

Calloused nail groove - from inflammation sometimes leads to heloma in the inner lateral nail groove, It is not ingrowing toe nail. Soft tissues expand with pressure + are forced up + over the nail itself. In ingrowing toe nail the edge of nail has passed into soft tissues of nail fold, Mal treatment of the calloused groove leads to ingrowing toe nail + proud flesh. Secondary Infections

Paronychia Inflammation of the connective tissues of the nail fold. The causes may be bacteria, fissuring ingrown toe nail.

Syphilis (multiple) chronic diseases like syphilis, recurrent cases from continuous damp in which infection is secondary

Periodontitis + osteitis in severe cases -

Onychia Inflammation of nail bed with suppuration, loosening + casting off of nail.

Onychocryptosis (nail curling) caused by injudicious cutting + fungus infection with deformity. It is known as onychogryphosis or ram's horn. Onychauxis (anux means increase)

11.12.46 continued

is hypertrophy of the nail, The papillia of the matrix are injured by pressure ~~excess~~ psoriasis, syphilis, rheumatism + nervous diseases, or by injury to the nerves serving the nails. Tubercular patients nearly all have moderate onychia of the finger nails.

Onychotrophy (atrophy of nails) nails become smaller and are often shed from the grooves. Bleeding may occur about the posterior nail fold in nervous diseases. In wasting diseases nails often crumble from under nourishment + chemical poisons both alkali + acids.

Leuconychia air in the corneal spaces due probably to injury. Transverse thinning + furrows in fevers. Spoon nail in chronic T. B. Onychorrhexis. Brittle nail calcium deficiency. Hyperkeratosis and Sudo Keratosis too much salt in diet, eat green vegetables water halibut oil + barley.

Cut out salts + sugars. Scrub to stimulate with brush - massage with goose oil or mutton fat rub into cracks.

Permanganate of Potash for sweating feet. Tannin + glycerine to harden up.

Epidermophytosis fungus infection of skin (a salicylic acid ointment for skin).

18. 12. 46. Gaits

The act of walking consists of a complicated series of movements under delicate control, carried out by the nervous system, muscle contraction.

Impulses originate in the cerebrum. Incoming impulses from every joint, muscle, ligament & tendon concerned are sorted out & coordinated along with others from skin, eyes & semicircular canals of the ear in the cerebellum, before going on to the cerebrum.

This delicately balanced mechanism occasionally become deranged - The following are some common abnormalities of gait :-

- 1/ Rolling gait, due to alcoholism, the higher coordinating mechanism is in abeyance.
- 2/ Waddling gait :- Due to painful affections of feet, flatfoot, club foot (talipes) actual deformity or result of poliomyelitis, diseases of hip, knee or ankle, dislocation of hip, congenital - usually bilateral (both sides).
- 3/ Motor nerves injury in Polio, leads to paralysis of certain groups & secondly to club foot.
- 4/ Stepping gait - Inflammation of nerve trunks (neuritis) due to toxic material in bloodstream from alcohol, lead, arsenic, mercury, diphtheria.

18.12.46 Cont.

chronic alcoholism. Picks out the ataxic
tibial group. Foot drop, sensory changes
as well, anaesthesia, paralysis.

5) Stamping gait: - Spinal cord sensory impulses
do not reach the brain. In locomotor ataxia or
Tubes (wasting) dorsalis. The person is unaware
of position of legs + feet. They rely on visual
sensations + semicircular canals. Blind
folded. They topple over (walking sticks always
carried (tripod position)). The muscles lose tone.
+ the leg is hyperextended at the knee joint
+ flung forward flail like.

6) Spastic gait: - paraplegia or disseminated
sclerosis. The adductors + the plantar flexors
pulls the legs together + the toes to the ground. Then
tip toe progression a convulsive muscular
contraction. as it gets worse becomes a scissor ^{gait} of progress.

7) Brain diseases, rupture of small
blood vessels in centre of brain causing
a clot to press on nerve fibres passing to the
spine causes apoplectic stroke, commonly
both arm and leg on one side are affected
(Hemiplegia) - Haemorrhage on the surface
of the brain can cause haemiplegia, but is
likely to be associated with progressive fit
called Jacksonian epilepsy -

18.12.46 Conts 2

7A Diseases of cerebellum, Reeling gait
Gait is reeling to side of disease likened
to drunkenness

8/- Muscles degenerate, climbing up legs, the
calf, buttock + shoulder muscles are weak
The spine is flexed backwards (lordosis)

9/- Paralysis agitans, festinating or
hurrying gait retro-pulsion
Perforating or trophic ulcers not to be
treated by chiropodist, no suppurating
condition to be treated.

8.1.47.

Inflammation. Is a series of local changes by which the body reacts to all types of injury, mechanical, thermal, chemical, electrical, x-ray, Radium etc + infective.

Infective Inflammation is the worst in its effects, because the causative organisms in tissues themselves. + is capable of multiplying to an almost unlimited extent. The changes are largely vascular.

1st Inflammation The blood stream is first quickened then followed by slowing down + dilatation of the capillaries. White cells adhere to the walls + make their way through (Diapedesis) - fluid from the blood stream transudes into the lymph.

Leucocytes + cells from tissues itself surround the invaders (chemotaxis) + devour them (phagocytosis) endotoxin + exotoxin kill phagocytes + tissue cells. pus forms (mild inflammation may reach resolution without pus formation) When suppuration leads to formation of an abscess, then surrounding wall of white cells is reinforced by fibrous + granulation tissue is build up. which in the case of chronic abscesses becomes true

fibrous tissue

The abscess is encysted. white cells. 8000 - c.m. ^(normal)

Signs & symptoms - changes in the tissues are - heat, redness, swelling, pain, loss of function to part. Generally, temperature rises, pulse increases patient becomes uneasy, & may sweat excessively. Leucocytes increase from 8000 - 18000 to c.m. Antibodies & opsonins react to exotoxins & produce more phagocytes, pressure in cavity is great, drainage relieves pressure, antibodies in lymph aid in destruction of invaders.

Granulation tissue grows from the walls of abscess & is converted into fibrous tissue, sides fall together & adhere, skin covers all.

In Hallux Valgus if Bursitis is caused by pressure & friction rest will remove the cause. In infective Bursitis inflammation will spread. Vaporizing lotion in early stages remove callouses to drain, hot applications essential if infective or suppurative.

Bunions. Ichthyol & glycerine 10 grs underneath black dressing on chamois keeps in heat. Infra Red Ray. 20 - 30 min Bursitis no extreme of heat or cold.

vaporizing lotion methylated spirits

Chilblains clean with peroxide or methylated.
or Dettol, paint with Balsam of Peru or
Friars Balsam and pad to relieve.

Acriflavine is good in obstinate ulceration
as it tends to liquify pus. Ichthyol + glycerine
may be used in nail groove; blisters, fissures
in heel ~~or~~ between toes acriflavine does
not destroy organic matter - 1-500 - 1-1000.
in saline solution. In inflammation use
acriflavine emulsion in cocoon dressing

15.1.47

Supports -

Examination of foot done when client is standing + walking -

Look for elongation - Use foot measure stick + shoe size indication. Look at tendon achilles, position of heels, toes, cuboid. If cuboid has sunk down to ground. (OS calcis has dropped with it.) The scaphoid The tibia, the peroneus longus. Swelling or pain at the knee, even if none in the foot, widening of the heel, Tuberosity of OS calcis.

Supports are used to supply new bearing points, in weak collapsed foot when weight is thrown too much on cuboid, + spring ligament

(Feet parallel 6 inches apart, + try to turn knees in)
1st stage weak foot - treatment is not often asked for - fit a foot easier to thin rather rigid type of foot. and an uplift for thick fat heavy foot. (higher plange)

A corrector for the short thick foot (short span for short arch) for light or elderly people fit an air-like (same shape as corrector)

Block size supports 3 - 5 for 3 - 4 + 5
in babies 3 - 5 - 6 - 8. 9 - 11

In nesses wide + narrow → 13 - 2

In women's wide + narrow - 3-5 - 6-8

In men's - wide + narrow 6-8 - 9-11 - 12 + 13

A. Style - provide better fittings, more expensive + of foot easer type - In single sizes from 2-8 in women wide + narrow in mens - 6-13 - wide + narrow -

1st foot easer adjustments. cut leather at back for rigid foot, fit $\frac{1}{4}$ inch behind met heads + for a flexible foot $\frac{1}{8}$ " behind met heads. Supports in style A. are for 1st + second stages of weak foot.

Surgical A. is a medium ordinary support
Osteopathic is a firmer metal support for a long flexible foot.

The Chiropedic for the heavy foot -
Rheumatism, painful joint -

Support A for nervous sensitive feet with or without a phauange but reinforced with a brace.

In third stage - use a tri spring (footeaser with three springs) or progressively the foot easer, tri spring or true span. A support for 3rd stages are reinforced with a brace -

4th Stage (Collapsed foot) flexible use a true span or a support with a brace for

4th stage rigid cushion in ~~heel~~ sole
for moist feet, use all metal supports
fitting in 1st + second stage fit contour of foot
in 3rd + 4th stage, fit firmly, muscles may be
resentful so wear supports gradually,
unless they are comfortable progressive
treatment sometimes necessary.
walking for weak feet -

22.1.47

Supports.

- NO 1 has a phalange 1st 2nd + 3rd
" 2 " no phalange
" 3. has a phalange weak on 3rd 4th + 5th met heads
" 4 metatarsal brace for slipper or light weight shoe
" 5 has no phalange support well cut under

great toe —

- NO 1 for 1st 2nd + 3rd met heads down. and longitudinal weakness. Has phalange.
" 2 1st 2nd + 3rd met heads down
" 3 3rd 4th + 5th " " " + longitudinal arch weakness
" 4 for very slight weakness used for sport + dancing (fan of metal)
" 5 3rd 4th + 5th met heads down + Morton's toe
Morton's toe means metatarsalgia but metatarsalgia not Morton's toe.

For severe bunions after inflammation is down use NO 3. The Transversus Pedis is lifted up by the support + the pull is increased on the base of the great toe.

For slight case of bunion + ingrowing toe nail use a foot easer + a toe flex.

If sesamoids are displaced between 1st + 2nd met heads fit a NO 2 support + raise support under ball of great toe.

22. 1. 47 Cont.

to pull sesamoids back to position. Lift very slightly & gradually to avoid pain from dorsal pressure. Lighter supports in Duralumin or heavier with a brace. The support may break during repositioning of severe misplacement (one support may be bought)

Hallux Rigidus, very painful -
No support & sometimes a wedge from medial ball of foot to base of 1st metatarsal to take weight (leather on sole) support separates met. heads (nervous patients)

For painful heel from weak foot condition (strain on plantar fascia) use foot easer raised in front of painful area (raise higher for spur) use pad with hole along with support (kay for a spur)

Hyperkeratosis Eudokeratosis
dry foot moist foot perspiration & dead skin

limit tea & coffee
Too much salt & plenty green vegetables water & barley water (halibut oil & orange juice cut out salt & sugar, scrub to stimulate - massage with goose oil or mutton fat. put in cracks & cover up.

Permanganate of potash for sweaty feet tannin & glycerine to harden up. Separated Epiphysis

22.1.47 Cont

8-16 years, caused by violent exercise in boys may strain - but when separation, leg starts to withering + apply foot easer + Dr.

Girls of ten get adventitious Bursa with swelling of tarsus. Rest essential, feet up foot easer longer shoe, lower heel, strap tightly behind heel.

When in doubt about a case fit No 2 + when whole foot has collapsed fit No 1 -

For progressive treatment follow No 1 by 3 + No 2 by No 5 or go on to more expensive supports

Style 11 is like No 1

" 12 " " No 2 -

Suplex are 51 - 52 53 - 55

Balanced posture support Style No 12 very light good support.

Suplex is best stainless steel.

Osteopathic is nickel silver

Podiatric is stainless steel.

For a prehensile foot fit an uplift or correcto

Dressings + Liquids

Lignos Potasse (Caustic) for softening

Peroxide

Mercurchrome 2% (mercury for masserated tissue)

Friar's Balsam (Gum) Antiseptic + Healing

S. V. M. Spirit to follow ray. Closes pores

Remover (Petrol) removing (adhesive etc.)

Soothing ointment (Balsam of Peru) in simple ointment)

Dettol Antiseptic

Acids for drawing

Salicylic 25% (Crystal) in simple ointment

" 80% "

" 60% in Resorcin

Nitrate of Silver 40% + 20% Coagulates albumin
in fluids contracts the papillae, + forms a crust
in most cases it helps to decrease congestion
+ inflammation (Some are allergic to use)

Bates Salve, for drawing + also soothes in
cases of inflammation

Ichthyol in Glycerine 10% cases in cases of
tissue that is tender, used in many cases for
nails under black dressings + also with 25%

Balsam of Peru in Castor oil for masserated tissue
fissures etc. apply before putting feet in ray

Aconite for painful bunion (acute) apply

compress 1-4 water.

Collodion for sealing dressing (forms a skin)
Lysol for instruments
Cyllin or Phenol (for disinfecting after infection)
Vaseline & Lanoline recommend for home treatment
Iodex Greenbarel " " " "
Iodine port. for chilblains, bruises etc

Massage Cream

2 quarts pure white paraffin oil
1 lb pure white beeswax
1 quart luke warm water
1 ounce powdered Borax.

Method Bring 1 qt paraffin oil to boiling pt.
add wax add rest quart of paraffin oil
then add luke warm water & stir well.
Dissolve borax in cupful of boiling
water, add, & stir well.

Anatomy + Phy Prelim School Aug 1946.

- 1 Name the tissues of the foot.
- 2 Describe one of these bones (os Calcis, Cuboid, Scafhoid,
or.
- 2A Give ten interesting facts about the development of bone.
- 3 Describe the great toe joint or the ball + socket joint of the tarsus.
- 4 Tell how a muscle works. or -
- 4A Tell what you know about skin

Chirology

- 1 Define Verruca Pedis, Hyperkeratosis, Callus, Ingrown toenail and synovitis.
- 2 Give treatment for removal of verruca in a moist foot. - or -
- 2A Tell what causes interdigital corns + how you remove them

Questions

1. Where would you find the malleoli, the peroneal tubercle, tarsal epiphysis, a pair of sesamoid bones & the spring ligament.
2. Give the insertion & function of the tibialis posterior & peroneous longus.
3. Tell what you know about skin or a capsular ligament.
4. What is a scarpis? how is it maintained?
5. Name three skin affections of the foot & two of the nails.
6. How would you excise a corn with inflammatory complications?
7. What is your treatment of verruca pedis?
8. Name the tissues of the feet.
9. Name & state the function of the muscles attached to scaphoid.
10. Describe the OS Calcis on the Talus.
11. Where exactly are the following - The short plantar ligament - The spring ligament - The inner malleolus, the peroneal tubercle. The sustentaculum tali.
12. Tell what you know about skin.
13. Give few interesting facts about the development of bone.

- 1 There are 26 bones in the foot + 2 sesamoid.
- 2 Tarsus: Ob. Calcis (heel bone) Astragalus (ankle bone).
 Saphoid Internal. Middle + External Cuneiform +
 Cuboid - Metatarsus, 1st 2nd 3rd 4th + 5th Metatarsus
 Phalanges: 1st Proximal Phalanx, 1st Distal Phalanx
 2nd Proximal, medial + distal Phalanx
 3rd " " " " " "
 4th " " " " " "
 5th " " " " " "

3/ The Ob. Calcis is largest bone in foot. about $2\frac{1}{2}$ " long.

4/ There are 14 bones in the toes of each foot. Two bones in the great toe + 3 in each of the four lesser toes.

5/ The function of a muscle is to give shape to the foot + to supply the motive power giving by moving, various movements to the foot + leg.

6/ Ligaments hold bones together at their joints or articulations + provide considerable movement for the foot generally.

7/ Tendons attach muscle to bone or bones to be moved.

8/ There are 4 arches in the foot.

9/ 1) Inner Longitudinal arch.

2/ The outer longitudinal Arch.

3/ The anterior metatarsal arch.

4/ The Transverse Arch.

10/ The inner longitudinal arch is located from inner border of Os Calcis from behind, extends forward to the head of the first metatarsal, Composing of Astragalus, Scaphoid, Internal Cuneiform to the first metatarsal, Highest point is Astragalus.

11/ The anterior metatarsal arch is formed by the heads of the 5 metatarsals between 1st & 5th.

12/ Weak foot condition is when the muscles & ligaments which hold the bones forming the arch in the natural arched position become strained & lose tone, allowing arch to fall.

13/ There are 4 conditions of weak or flat foot.

1/ Ligaments become strained & lose tone, some flabbiness but no change in contour.

2/ Foot slightly flattened when standing.

3/ Where there is a structural change in contour.

4/ Advanced flatfoot, where the foot has lost its natural arching & assumes a flattened condition.

14/ 1/ Aching & tiredness in lower leg.

2/ Aching across top of foot & swollen ankles.

- (13) Tiredness + sometimes acute pain in heels.
+ feet perspire freely.
- (14) General discomfort in feet when standing or walking.
- (15) Cramping of toes in shoes, callous, corns and ingrowing toe nails + an enlargement at the 1st + 5th metatarsal Phalangeal joints.
- 15) appliances I would use, Dr Scholl's "Foot Easer" "Tri Spring" "True Spaw", whichever support is suited to the condition + gives relief.
- 16) measure the foot with Dr Scholl's measure stick + use the size in support which is nearest to the shoe size indicated. The support should fit snugly into the arch of the foot. Flush from back of heel to ball of foot + seat firmly in shoe without side play.
- 17) Question patient - if wearing correct size in shoes + well fitting hosiery (not pointed or too short) + advise use of home treatment. Dr Scholl's "Foot Cream", Pedico foot soap + antiseptic powder. I recommend potencies.
- 18) Metatarsalgia is strained + weakened muscles of the anterior metatarsal arch. Sometimes only one of the bones of the metatarsal heads become depressed + occasionally the entire arch is obliterated.

- 19/ Morton's toe pain is a sharp, cramp like pain usually in the region of the 4th metatarsal caused by nerve impingement upon bone displacement
- 20/ The outward symptoms of depressed metatarsal bones. is marked spreading of the foot across the metatarsal arch when standing and a drawn back appearance of the toes, tenderness accompanied by pain redness on the ball of the foot, later pain & thickened skin & callous
- 21/ after noticing outward appearance of foot. I would look for callous on sole, soft corns between toes, enlarged great toe or little toe joint, Hold top of foot in left hand. with Right hand bring pressure on different heads of metatarsals, where pain is, seat of trouble is located. note extension of toes, foot will spread when patient stands.
- 22/ Improve condition by using Dr Scholl's Soap cream & foot powder. They fit well with Dr Scholl's Anterior metatarsal arch support N^o 1, 2, 3, or 5 to suit the condition & give comfort to the wearers, give massage & foot exercise
- 23/ Generally speaking the elevation should be gradual between the 1st & 5th met heads in advanced stages make the elevation more

acute beneath the met head mostly depressed

24. On examination there may be no change in outward appearance, or it may be bruised + is painful + tender, sometimes patient is unable to stand, there may be an odorous perspiration around heel. Correct arch weakners as may be due to weak foot condition. Do a Pedograph, measure stick foot test, advise xray, to see if pain is due to a spur or bony growth. If so advise rest + fit Dr Spring Arch support together with a sponge rubber heel cushion with a hollow in cushion directly under spur. If mainly due to arch weakness fit, Dr Scholl's support according to condition.

25. Dr Scholl's Arch fitting machine. together with a rawhide or wooden hammer must be used for elevating or lowering supports.

26. Hallux Valgus. is enlarged + painful great toe joint.

A Bunion is inflammation of a Bursa at the great toe joint.

27. To remove shoe pressure on a bunion see that shoes and stockings are correct size. If toe is flexible Dr Scholl's toe flex should be worn. Use Dr Scholl's bunion reducers.

to reduce swelling, if arch weaknes present fit Dr Scholl's "Foot Easer" or Dr Scholl's according to condition. If inflamed use Dr Scholl's, bunion lotion & ointment.

28/ I would recommend, correct fitting shoes & stockings remove pressure by Dr Scholl's foot support. To apply Dr Scholl's zinc pads. Dr Scholl's medicated disc directly over corn. Dr Scholl's corn salve. with tarso pads. 2 drop corn cure for soft corns. Recommend heppie with Dr Scholl's soap, cream & powder.

29. Callouses on feet are caused by abnormal friction or bone displacement. They are nature's attempt to protect the underlying tissues from injury, often found when the anterior met. arch has fallen

30/ For excessive perspiration, examine foot for arch weaknes. If present fit Dr Scholl's support all heel at for preference. suggest home treatment with Dr Scholl's, Soap cream & powder. always keep feet dusted. with antiseptic powder. keep powder in shoes & stockings, change stockings daily. alternate days of wearing 2 pairs of shoes. keep trees in shoes to hold shape.

31/ To obtain correct size in fitting shoes, use Dr Scholl's measure stick & shoe size indicator

make sure to note extension of foot with the
body's weight if extends more than $\frac{1}{2}$ a size
watch for arch weakness.

32

The essentials in giving foot comfort
well fitting shoes + stockings, corrective
arch support, general hygiene of
feet with Dr Scholl's foot cream +
powder and foot exercises.

25. What would you use for the purpose of adjusting, elevating or lowering arch supports.
26. What is Hallax valgus + Bunion.
27. What is the practical treatment to relieve the shoe pressure on a bunion?
28. What would you recommend to a customer for corns.
29. Why are there callouses on the sole.
30. What would you recommend in case of excessive perspiration & where the lining of the shoe has been sweated out?
31. How do you obtain correct size in fitting shoes.
32. What are the essentials in giving foot comfort.

- 1 How many bones in the foot.
- 2 Give names of bones in the foot
- 3 What is largest bone in foot.
- 4 How many bones in the toes of each foot
- 5 What is the function of a muscle
- 6 What is the function of a ligament
- 7 What is the function of a tendon.
- 8 How many arches in foot.
- 9 Name them.
- 10 Where is the inner longitudinal arch located
- 11 What bones form the anterior metatarsal arch.
- 12 What is weak foot condition.
- 13 How many conditions of weak or flat foot.
- 14 Describe symptoms of weak or flat foot.
- 15 What appliances would you use for relief.
- 16 How would you fit arch supports + obtain correct lengths.
- 17 What else would you recommend in add. to appliance
- 18 What is metatarsalgia.
- 19 Describe Morton's Toe pain.
- 20 What is one of the principal outward symptoms of depressed metatarsal bones.
- 21 How would you recognize a case of metatarsalgia?
- 22 What is the treatment.
- 23 How would you make your adjustments.
- 24 Describe painful heel + treatment.

1st movement with fingers of both hands back to back thumbs away from the body, place under the met. heads thumbs working down inner and outer sides of the foot coming back crossing over on top of foot. finishing by spreading met. heads.

2nd movement (Middle) thumbs together and parallel place under met heads with finger tips on top of the foot work down between the tendons.

3rd movement (Little O's) Hands in same position as for first movement; work thumbs down the tendons making small O's.

4th movement (Separating met heads) thumbs on plantar surface and finger tips on dorsum (top of foot)

5th (Suction movement)

6th (Rotating toes) Great toe rotates inwardly. Other toes rotate outwardly.

7th. Rolling met heads Cup relaxed hands & roll the

8th Thumbs up Plantar Brisk movement, starting from heel work up to met. heads good firm pressure, spread out

9th Hands down Plantar

10th Massage ankle, reverse movement.

11th Hands clasped, thumbs under met. heads, slide down leg & sweep back.

12th See saw movement. Sliding movements on leg drawing met heads back.

- 13th Caterpillar movement.
- 14th Rolling leg muscles. cupped relaxed hands
rotating motion - down leg. Start behind
ankle -
- 15th Cup heel with hand and rotate ankle
but at the same time firmly hold with Right
hand, inward rotation. flex & extend.

ARITHMETICAL TABLES

NUMERATION TABLE

Units	1
Tens	12
Hundreds	123
Thousands	1,234
Tens of Thousands	12,345
Hundreds of Thousands	123,456
Millions	1,234,567
Tens of Millions	12,345,678
Hundreds of Millions	123,456,789

STERLING MONEY TABLE

4 Farthings	1 Penny .. <i>d</i>
12 Pence	1 Shilling .. <i>s</i>
2 Shillings	1 Florin
2 Shillings Sixpence ..	1 Half-crown
5 Shillings	1 Crown .. <i>cr.</i>
10 Shillings	1 Half Sov.
20 Shillings, 1 Sov. or 1 Pound	
21 Shillings	1 Guinea

ARITHMETICAL SIGNS

+	Plus; Sign of Addition
-	Minus; Sign of Subtraction
×	Sign of Multiplication
÷	Sign of Division
=	Sign of Equality
∴	Sign of Proportion
√	Sign of the Square Root
∛	Sign of the Cube Root
°	Degree ' Minute " Second
∴	Therefore

TROY WEIGHT

For Gold, Silver, and Jewels	
24 Grains	1 Pennyweight <i>dwt</i>
20 Pennyweights	1 Ounce .. <i>oz</i>
12 Ounces	1 Pound .. <i>lb</i>

APOTHECARIES WEIGHT

For Mixing Medicines	
20 Grains	1 Scruple .. <i>scr</i>
3 Scruples	1 Dram .. <i>dr</i>
8 Drams	1 Ounce .. <i>oz</i>
12 Ounces	1 Pound .. <i>lb</i>

AVOIRDUPOIS WEIGHT

For all goods except Gold, Silver and Jewels.	
16 Drams	1 Ounce .. <i>oz</i>
16 Ounces	1 Pound .. <i>lb</i>
14 Pounds	1 Stone .. <i>st</i>
28 Pounds	1 Quarter .. <i>qr</i>
4 Quarters	1 Hundredweight <i>cwt</i>
20 Cwt.	1 Ton .. <i>tn</i>

HAY AND STRAW WEIGHT

36 lb. Straw	1 Truss
56 lb. Old Hay	1 Truss
60 lb. New Hay	1 Truss
36 Trusses	1 Load

LONG OR LINEAL MEASURE

12 Lines	1 Inch .. <i>in</i>
12 Inches	1 Foot .. <i>ft</i>
3 Feet	1 Yard .. <i>yd</i>
2 Yards	1 Fathom .. <i>f</i>
5½ Yards	1 Pole
40 Poles	1 Furlong .. <i>fur</i>
8 Furlongs or 1760 yds.	= 1 Mile

CLOTH MEASURE

2½ Inches	= 1 Nail
4 Nails	= 1 Quarter of a Yard
4 Quarters	= 1 Yard

SOLID OR CUBIC MEASURE

1728 Cubic Inches	= 1 Cubic Foot
27 Cubic Feet	= 1 Cubic Yard
24½ Cubic Feet	= 1 solid Perch mason's work
12½ Cubic Feet	= 1 Solid Perch brickwork

IMPERIAL HEAPED MEASURE

Lbs. Avoird. of Water	
8 Gallons	= 1 Bushel .. = 80
3 Bushels	= 1 Sack .. = 240
12 Sacks	= 1 Chaldron = 2880

IMPERIAL DRY MEASURE

Avoird. of Water .. lb. oz.	
2 Glasses	= 1 Noggin .. = 0 5
4 Noggins	= 1 Pint .. = 1 5
2 Pints	= 1 Quart .. = 2 8
4 Quarts	= 1 Gallon .. = 10 0
2 Gallons	= 1 Peck .. = 20 0
4 Pecks	= 1 Bushel .. = 80 0
8 Bushels	= 1 Quarter .. = 640 0

SQUARE MEASURE

144 Square Inches	= 1 Square Foot
9 Square Feet	= 1 Square Yard
30¼ Square Yards	= 1 Square Pole
40 Square Poles	= 1 Rood
4 Roods	= 1 Acre

TABLE OF MOTION

60" Seconds	= 1 Minute
60' Minutes	= 1 Degree
30" Degrees	= 1 Sign
12" Signs or 360"	= the Circle of the Earth

TABLE OF TIME

60 Seconds	= 1 Minute
60 Minutes	= 1 Hour
24 Hours	= 1 Day
7 Days	= 1 Week
4 Weeks	= 1 Month
365 Days	= 1 Year
366 Days	= 1 Leap Year
52 Weeks	= 1 Year
12 Calendar or 13 Lunar Months	= 1 Year

DAYS IN THE MONTHS

Thirty days hath September,
April, June, and November;
All the rest have thirty-one
Excepting February alone, (clear,
Which has but twenty-eight days
And twenty-nine in each Leap Year

MULTIPLICATION TABLE

	2	3	4	5	6	7	8	9	10	11	12
TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES	TIMES
1 are 2	1 are 3	1 are 4	1 are 5	1 are 6	1 are 7	1 are 8	1 are 9	1 are 10	1 are 11	1 are 12	
2 — 4	2 — 6	2 — 8	2 — 10	2 — 12	2 — 14	2 — 16	2 — 18	2 — 20	2 — 22	2 — 24	
3 — 6	3 — 9	3 — 12	3 — 15	3 — 18	3 — 21	3 — 24	3 — 27	3 — 30	3 — 33	3 — 36	
4 — 8	4 — 12	4 — 16	4 — 20	4 — 24	4 — 28	4 — 32	4 — 36	4 — 40	4 — 44	4 — 48	
5 — 10	5 — 15	5 — 20	5 — 25	5 — 30	5 — 35	5 — 40	5 — 45	5 — 50	5 — 55	5 — 60	
6 — 12	6 — 18	6 — 24	6 — 30	6 — 36	6 — 42	6 — 48	6 — 54	6 — 60	6 — 66	6 — 72	
7 — 14	7 — 21	7 — 28	7 — 35	7 — 42	7 — 49	7 — 56	7 — 63	7 — 70	7 — 77	7 — 84	
8 — 16	8 — 24	8 — 32	8 — 40	8 — 48	8 — 56	8 — 64	8 — 72	8 — 80	8 — 88	8 — 96	
9 — 18	9 — 27	9 — 36	9 — 45	9 — 54	9 — 63	9 — 72	9 — 81	9 — 90	9 — 99	9 — 108	
10 — 20	10 — 30	10 — 40	10 — 50	10 — 60	10 — 70	10 — 80	10 — 90	10 — 100	10 — 110	10 — 120	
11 — 22	11 — 33	11 — 44	11 — 55	11 — 66	11 — 77	11 — 88	11 — 99	11 — 110	11 — 121	11 — 132	
12 — 24	12 — 36	12 — 48	12 — 60	12 — 72	12 — 84	12 — 96	12 — 108	12 — 120	12 — 132	12 — 144	